

Radio Waves From Your System Giving Away Your Secrets?

By Tom Henkel
CW Staff

Someone could be sitting in a car or a van in your parking lot right now, monitoring everything that goes on in your computer system.

Your system will not be touched. Your communications lines have not been breached.

But someone clever may be listening, and you may never know it. Why?

Most parts of a computer system — the processor, disk drives, tape drives, CRT terminals and even the cables that connect various devices — give off radio waves called radio frequency interference. According to J. Michael Nye, a computer security consultant with Marketing Consultants International, Inc. in Hagerstown, Md., it is theoretically possible to capture those radio waves and translate them, giving the recipient knowledge of whatever is going on inside a computer system at a given time.

Some security experts are worried that this new possibility for electronic espionage could threaten both government and corporate secrets

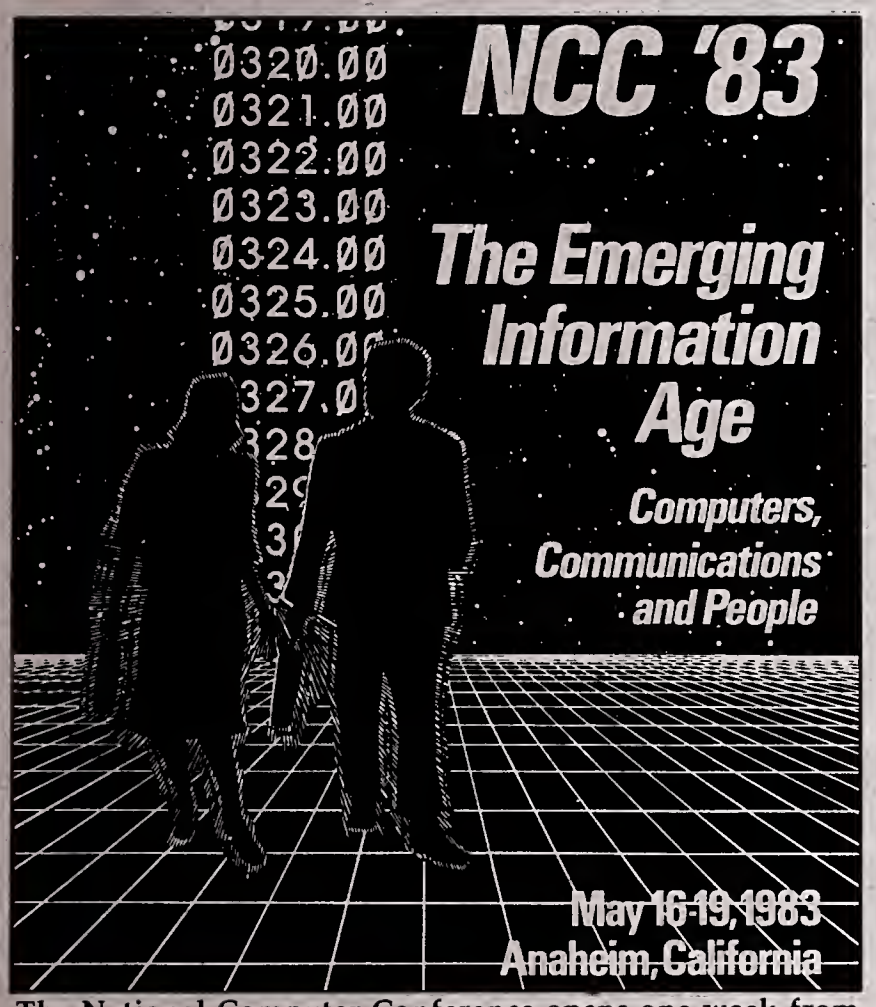
(Continued on Page 10)

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper Second-class postage paid at Framingham, Mass. and additional mailing offices ©1983 by CW Communications/Inc.

$1.50 a copy; $44/year May 9, 1983 Vol. XVII, No. 19



The National Computer Conference opens one week from today in Anaheim, Calif. A special *Computerworld* preview of what to expect at the computer industry's largest annual show follows the In Depth section.

PE Expands Supermini Line With Compact $10,000 Unit

By Susan Blakeney
CW Staff

OCEANPORT, N.J. — Perkin-Elmer Corp. today expanded its Series 3200 family of 32-bit superminis by adding a low-end model that is priced under $10,000 and is built around a single-board processor.

The firm also introduced a 16-bit desktop computer for scientific applications (story on Page 8).

The 32-bit machine unveiled today, the Model 3205, is positioned to compete against superminis like Digital Equipment Corp.'s VAX-11/730 and Prime Computer, Inc.'s Model 2250. It is fully compatible with PE's Series 3200 family, incorporates 64K-byte chip technology and supports up to 4M bytes of memory, a spokesman for PE maintained.

The system will make its first appearance next week at the National Computer Conference in Anaheim, Calif.

The basic 3205 configuration consists of two boards that are packaged in an eight-slot, 7-in.-high chassis. These boards include the firm's 3205 processor, which contains 512K bytes of main memory and integral floating-point capability, and a Multi-Peripheral Controller (MPC) board. A selector channel is also included in the package, the spokesman noted.

The MPC board incorporates eight RS-232, full-duplex communications lines, a parallel line printer port, precision interval and line frequency clocks, a watchdog

(Continued on Page 8)

First User of MVS/XA Gets Breathing Space

By Lois Paul
CW Staff

HARTFORD, Conn. — A year ago, it looked like Travelers Insurance Co. was reaching the end of its systems rope. System constraints loomed — constraints so serious that the insurer thought it would have to add more hardware by the end of 1983.

Instead, the company became the first and largest of eight U.S. sites to put IBM's MVS/Extended Architecture (XA) operating system into production under the vendor's Early Support Program (ESP).

With the installation last November of MVS/XA (also known as MVS/SP 2.1), "we feel that we will have no problem getting through this year with virtual storage, and we suspect that the virtual storage relief we are getting will take us through next year as well," Dave Reynolds, assistant director of Travelers' Computer Science Division, said in a recent interview.

The company has four complexes of IBM mainframes, which include 3033s, 3083s and 3081 Model Ds running under MVS/SP 1.3 and a 3081 Model K running under MVS/XA. The MVS/XA-based system currently supports 200 TSO users — applications programmers in the firm's Hartford home office — and approximately 10 batch/RJE initiators.

Before acquiring MVS/XA, Travelers had attached a large number of devices to all of its systems and was forced to put a limit on their proliferation. Now, howev-

(Continued on Page 8)

Nine Charged in DP Fraud Suit

By Patricia Keefe
CW Staff

CARBONDALE, Ill. — Southern Illinois University here has filed a $1.3 million civil suit that charges nine people, including the university's former head of computing affairs, with purchasing and leasing computer equipment for the university at inflated prices through bogus suppliers.

No court date has been set for the case, which was filed in County Circuit Court in Murphysboro, Ill. It seeks actual damages of $400,000 and punitive damages of $900,000, charging the defendants with breach of contract, breach of fiduciary duty and conspiracy, fraud and deception concerning the lease, sale and exchange of computer equipment and software to the university.

A grand jury is reportedly studying evidence to determine whether criminal charges should be pressed.

The suit charges that Barry Bateman, SIU's executive director for computing affairs from July 1976 to June 1981, and the other defendants, including four who worked under Bateman, purchased computer equipment for the university at inflated prices from three phony firms. The firms, which Bateman allegedly organized, were identified as Virtual Computing Systems of Port Arthur, Texas, Nova Computing Services of Clayton, Mo., and Angelina Computer Sales of Lufkin, Texas.

The firms are named as

(Continued on Page 4)

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
TM reg. U.S. Pat. Off.

Editor John C. Whitmarsh
Managing Editor Rita Shoor
News Editor Cheryl M. Gelb
Technical Editor Timothy J. Scannell
Senior Editors:
Software Lois Paul
Communications Phil Hirsch
Bruce Hoard
Systems Ed Scannell
Office Automation Bruce Hoard
Industry Bill Laberis
Features George Harrar
Writer/Analysts: Marguerite Zientara
Tom Henkel
Senior Writer: Jim Bartimo
Staff Writers: Paul Gillin
Katherine Hafner
Patricia Keefe
Staff Writer/
Photographer: Susan Blakeney
Correspondents:
New York Bob Johnson
Washington, D.C. Jake Kirchner
West Coast Robert Batt
Jeffry Beeler
Features Coordinator: Barbara Van Scoyoc
Chief Copy Editor: Donovan White
Assistant Chief Copy
Editor: Kathie Gow
Copy Editors: Dave Bouffard
Bruce Crane
Patti Hartigan
Betsy Morse
Deborah Scaduto
Thomas Schmidt
Charlotte Ziems
Editorial Assistants: June Fettig
Joyce Furia
Mary DeCristoforo
Contributors:
Education J. Daniel Couger
Human Connection Jack Stone
Lecht on Science Charles P. Lecht
Softline Werner L. Frank
SPECIAL PUBLICATIONS
Computerworld Extra!
Editor John C. Whitmarsh
Computerworld OA
Editor Ann Dooley
Staff Writer Glenn Rifkin
Copy Editor Nancy Fleming
Computerworld Buyer's Guides
Editor Marcia Blumenthal
Copy Editor Rick LePage

Please address all correspondence to the appropriate department at Box 880, 375 Cochituate Road, Framingham, Mass. 01701. Phone: (617) 879-0700. Telex: 95-1153.

OTHER EDITORIAL OFFICES & SALES OFFICES:

New York: Suite 7G, 401 East 80th St., New York, N.Y. 10021. Phone: (212) 570-2135.

West Coast: 257 Lytton Ave., Palo Alto, Calif. 94301. Phone: (415) 328-8064.

Washington, D.C.: 880 National Press Building, 529 14th St. N.W., Washington, D.C. 20045. Phone: (202) 347-6718.

England: Bill Dunlop, Stephen Thomas, Beere Hobson Assoc., 345 Goswell Rd., Islington, London EC1V FHN. Phone: 01278 3415/6.

W. Germany: Eckhard Utpadel, CW Publikationens, Friedrichstrasse 31, 8000 Munich 40. Phone: (089) 34-90-61. Telex: 5215350

France: Patrick Morel, Le Monde Informatique, 42, Avenue Montaigne, 75008 Paris. Phone: 720.85.66.

Japan: Mr. Shohei Kurita, Computerworld Japan, 7-4 Shintomi 1-Chome, Chuo-ku, Tokyo 104. Phone: (03) 551-3882, Telex: 252-4217. Esteban H. Yamada, Tokyo Representative Corp., Yamaguchi Bldg., 2-12 Kanda Jimbo-Cho, Chiyoda-Ku, Tokyo 101, Phone: (03) 230-41178, Telex: J26860.

Australia: Alan Power, Computerworld Pty. Ltd., 37-43 Alexander Street, Crows Nest, NSW 2065. Phone: (02) 4395133, Telex: SECCO AA25468.

Brazil: Eric Hippeau, Data News, Computerworld do Brazil, Servicos e Publicacoes Ltda., Rua Alcindo Guanabara, 25/10th Floor 20031 Rio de Janeiro, RJ Brazil. Phone: (021) 240-8225. Telex: 2130838(WORD BR).

Mexico: Richard Small, Computerworld de Mexico, Oaxaca 21-2, Colonia Roma, Mexico City 7 D.F. Phone: (905) 514-4218, (905) 514-6309 Telex: 1771300 ACHAME, 1777809 ACHAME.

Spain: Neil Kelley, Computerworld/Espana, Gravina, 13, Madrid 4. Phone: 231-23-85; 231-23-86; 231-23-88. Telex: 47894(CW E).

Denmark: Preben Engell, Computerworld/Denmark, Gammel Strand 50, 1202 Copenhagen K. Phone: 01-1234-11. Telex: 27566 cwdan.

Sweden: Bengt Marnfeldt, Computerworld/Sweden, Nova Media AB, Vartavagen 55, 11538 Stockholm.

Italy: Daniele Comboni, Gruppo Editoriale Jackson, s.r.l, Via Rosellini 12, 20124 Milano.

Second-class postage paid at Framingham, Mass., and additional mailing offices PN127420. *Computerworld* (ISSN-0010-4841) is published weekly, except: February (5 issues), April (5 issues), May (6 issues), June (5 issues), August (7 issues), September (5 issues), October (7 issues), November (5 issues), December (4 issues) and a single combined issue for the last week in December and the first week in January by CW Communications/ Inc., Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

Copyright 1983 by CW Communications/Inc. All rights reserved.

PHOTOCOPY RIGHTS: permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by CW Communications for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus $ 50 per page is paid directly to Copyright Clearance Center, 21 Congress Street, Salem, MA 01970.

Permission to photocopy does not extend to contributed articles followed by this symbol. ‡

Special requests should be addressed to Nancy M. Shannon, CW Communications/Inc. Box 880, 375 Cochituate Rd., Framingham, MA 01701 ISSN 0010-4841/82 $3.00 + $.50

$1.50 a copy: U.S. — $44 a year; Canada, Central & So. America — $110 a year; Europe — $165 a year; all other countries — $245 a year (airmail service). Four weeks notice is required for change of address. Please allow six weeks for new subscription service to begin.

ABC ABP mcc MEDIA DATA FORM

POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Circulation Dept., Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

USPS Fails to Convince House Panel That Ecom Can Turn a Profit by '85

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — Officials of the U.S. Postal Service (USPS) tried hard last week to convince Rep. Glenn English (D-Okla.) that the Postal Service's controversial Electronic Computer-Originated Mail (Ecom) service will turn a profit by 1985. They were unsuccessful.

English, who heads a House government operations subcommittee that last year charged that Ecom rates were too low to meet its costs, called in Postal Service officials to justify a proposed rate increase [CW, May 2]. In his opening statement, English said that even if the proposed increase had been in effect last year, the Postal Service still would have lost $5.20 on each of the 3.2 million Ecom messages it delivered during that period.

According to Postal Service figures, total per-message costs were $5.51. It has proposed raising the rate for a one-page message from 26 cents to 31 cents.

The $5.51 figure covers the entire cost of developing Ecom, William Sullivan, the USPS governor responsible for overseeing Ecom, told the hearing. Sullivan explained that it is normal business practice to spread such start-up costs over the first several years once a new product or service is offered, which is what USPS has done.

If the rate hike is authorized, he added, Ecom's annual volume will reach 380 million messages by the end of fiscal year 1987, compared with 3.2 million in fiscal year '82; income will equal outgo by 1985; and there will be enough of a surplus to repay all accumulated deficits by the end of 1987.

Karen Uemoto, director of Ecom operations, said she still believes 25 million Ecom messages will be delivered this fiscal year, which ends Sept. 30, even though monthly volume currently averages only a little over one million messages. To meet that goal, volume for the five remaining months of fiscal year '83 will have to total 18 million messages. That would represent a 360% increase over the present average.

Between fiscal year '82 and fiscal year '83 to date, Uemoto told the English subcommittee, the increase amounted to about 286% — rising from 360,000 messages per month to slightly more than one million.

Six Firms

She also reported, in response to questions from English, that approximately six firms currently account for 70% of Ecom's traffic. But this does not mean Ecom serves a limited market, she indicated, for each of the six customers is a service organization that, by consolidating message streams from a number of end users, meets Ecom's requirement for a minimum of 200 messages per transmission.

Along with its higher proposed rates, USPS wants to eliminate the 200-message minimum. Uemoto said doing so would increase volume significantly by attracting smaller companies that currently do not use the service.

However, "the Postal Service's track record . . . just hasn't been that good," English said. "Last September, postal officials were projecting 50 million Ecom messages for this year; they have now scaled back to 25 million, and just yesterday the Postmaster General announced that the weekly volume had leveled off below 300,000. I wouldn't be surprised if the 25 million projected for this year soon becomes 15 million."

Keep an Eye on Your Mailbox

Computerworld's 120,000 subscribers will find something new in their mailboxes next week — the premiere issue of *Computerworld on Communications.*

This 100-page special publication is devoted to in-depth coverage of the broad spectrum of voice, image and data communications. It is the latest special publication from CW Communications, Inc., publishers of *Computerworld* newspaper and *Computerworld OA.*

Fifteen feature articles prepared by experts in their fields probe the issues, trends, applications and technology surrounding the communications industry and corporate communications networks.

An interview with Archie McGill, chief of American Bell, Inc., highlights the first issue of *Computerworld on Communications.* Other articles focus on the integration of voice and data communications, cost-effective telecommunications management, new local loop services and network management software and more.

A second issue of *Computerworld on Communications* is scheduled for publication in late September. Both issues this year are being sent to you free as part of your CW subscription.

This Week

SPECIAL CW PREVIEW OF NCC '83 ..... Follows ID/22

IN DEPTH

France Looks Ahead ..... Follows Page 84

NEWS

Court Date Set in Suit Over Prime Supermini 4
DG, Rolm Unveil Ada Development Systems 5
PE Scientific Desktop Boasts Color Graphics 8
Poll Finds Women Earning More in OA, Sales 6
Staff Hikes Output From 75 to 6,900 Programs 11
Info Systems Designers Seen Economic Saviors 12
U.S. Firms Seen Lax in Data Privacy 13
Warning Issued on DP-End User Collusion 14
Programmer/Analyst Loots Fund for $17,000 15
Users Group Criticizes FCC Plan for Detariffing 16
Freedom to Compete Seen Crucial to USPS 17
Study Finds '82 Data Entry Salaries Up 6.5% 18
Pressure on Storage Researchers Mounting 19
Shift From Doing to Managing Seen Critical 20
Systems Planning Method Outlined 21
Communication Said Key to Effective Info Center 22
Datapro Finds 8-Bit Micros Still Dominate Sales 23
End-to-End Encryption Called Useful for Nets 24
'Trusted DP Systems' Seen Vital to Net Security 25
How to Choose a Consultant: Exec 26
Lawsuits Seen on the Rise With Systems Use 27
Hopper to Receive Award at AWC Meeting 31
Users Group Lauds TI Management 34

EDITORIAL

Editorial: Tackling the Factory 40
Softline: What Makes DP Go? Three Forces 41
Reader Commentary: DP Criminal's Future? 41
Reader Commentary: Life On-Line 44

SOFTWARE & SERVICES

Cobol Generator Runs on IBM OS/VS, DOS 49
Security Added to 'Com-Plete' 50
'Guardian' Gets Update 55
'Omnicalc' Spreadsheet Program Gets Update 56
Technalysis' Packages Extend Power of TPS 6 58
Video Presentation Teaches Users 'Visicalc' 62

COMMUNICATIONS

Videotex/Teletext Assailed for Promises 63
Package Provides Security for HP Terminals 64

SYSTEMS & PERIPHERALS

Storage Units, Controller Expand NAS Tapes 67
Micro Features Hard, Floppy Disk Storage 68
Firm Unwraps 16-Bit, 9-Lb Portable Micro 69
Micro Line Released for Multiuser Applications 70
Memory Boards Fit DEC VAX-11/750, 730 72

OFFICE AUTOMATION

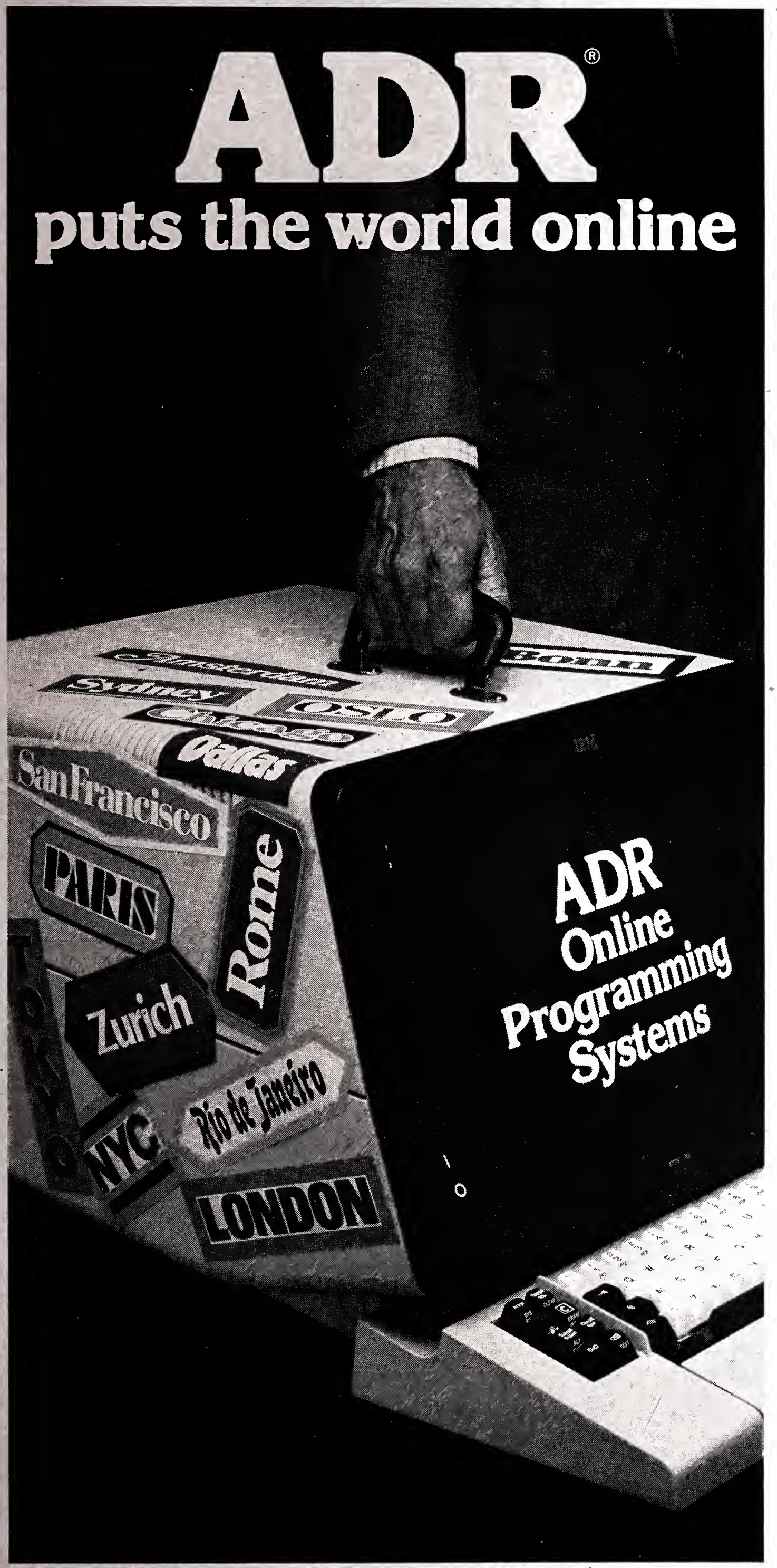
Study Identifies Key to OA Productivity 73
WP Capability for HP 3000 Out 74

COMPUTER INDUSTRY

Recovery Looks Good for Semi Industry 75
'Harmonizing' Seen Factor in Japan's Success 75
Commerce Endorses Trade Department Concept 80
Exec Advocates 'Advanced Control Systems' 82
Time-Sharing Seen Facing Sweeping Changes 83

ADVERTISING INDEX

..... 116



ROSCOE®. VOLLIE®. The LIBRARIAN®.

#1 around the world. From ADR, the world's #1 software company.

At ADR, we've installed 14,000 products worldwide, 4,000 of them online since 1970 — more than any other independent company. ROSCOE for MVS and VS1 sites. VOLLIE for VSE and SSX. The LIBRARIAN for ROSCOE, VOLLIE, CMS, TSO AND SPF.

Your programmers produce more at terminals that access ADR's award winning systems. They make fewer errors. They enjoy rapid response. They are productive within a day of installation.

ADR has dispelled the myth that benefits must be sacrificed for online programming. ROSCOE, VOLLIE and The LIBRARIAN provide control, security, auditability and recovery of programs. Any program version — old or new — can automatically be reconstructed and viewed online. Source listings are time- and date-stamped no matter which terminal editor is used.

Another exclusive from ADR is the integration of ROSCOE, VOLLIE and The LIBRARIAN with DATADICTIONARY®. Program changes to The LIBRARIAN by ROSCOE or VOLLIE will interactively update DATADICTIONARY definitions — greatly simplifying your program development effort.

ROSCOE, VOLLIE and The LIBRARIAN. Part of ADR's exclusive integrated network — from the leader in fourth-generation software technology and customer service.

Learn more about ADR's online programming systems. Contact your local ADR office or send in the coupon.

APPLIED DATA RESEARCH

The Big Difference is our integrated network.

Route 206 & Orchard Rd., CN-8
Princeton, NJ 08540/(201) 874-9000

I am interested in:

- ☐ Management presentation.
- ☐ Call from marketing representative.
- ☐ Product literature.

Name/Title

Company

Address

City/State/Zip

Telephone

Computer CW 5/9

Service Bureau Seeks $500,000

Court Date Set in Suit Over Prime Supermini

By Jake Kirchner
CW Washington Bureau

BALTIMORE — A small service bureau here that bought a 32-bit Information 5000 system from Prime Computer, Inc. three years ago will go to court next month to try to get its money back.

Quality Data Processing, Inc. is charging Prime, the Minicomputer Co. of Linthicum, Md., Datatel, Inc., an Alexandria, Va., authorized Prime dealer, and the Datatel representative that sold the system to Quality with 12 counts of breach of warranty, breach of contract, fraudulent misrepresentation and negligence. The suit, scheduled for trial in Baltimore City Circuit Court June 21, is seeking $500,000 in damages.

A Prime spokeswoman at company headquarters in Natick, Mass., declined comment on the allegations in the suit, citing company policy against discussing any matter in litigation against the firm.

The suit alleges that "from June 12, 1980, the day installation started on Quality's Prime Information 5000 system, Quality experienced substantial hardware and software problems and inadequate hardware and software support. The hardware and software did not work properly and never did for as long as Quality tried to use the system."

But according to the attorney representing Quality in the suit, J.T. Westermeier of the Washington, D.C., law firm of Abrams, Kovacs, Westermeier and Goldberg, that description does not begin to illustrate the extent of the problems Quality had with the Prime system, problems which he says caused as much as 55% downtime. For a small company such as Quality, these alleged problems could have been disastrous, according to Westermeier.

Previous Configuration

Quality, established in 1972, currently has a staff of 25 and had revenues exceeding $1 million last year, according to its president, Robert Miller. At the time of its Prime purchase, the company also was running a Memorex Corp. 50 and a Harris Corp. 120 system

The firm initially acquired the Prime Information 5000 system, with 1M byte of main memory, two 300M-byte disk drives, a printer, card reader and 10 CRT terminals, plus software that included Cobol and RPG-II compilers, to handle one major application. That job, Miller said, was to perform recordkeeping and disbursements for a third-party insurer that handles between 120,000 and 140,000 medical prescriptions per month.

That application was never satisfactorily run on the Prime system, according to the suit, which charges that Quality's problems with Prime extended to Prime's Primos operating system and other software, as well as with the printer and terminals supplied as part of the contract.

Miller's complaints against Prime and its agents are described in the suit in a 19-page log that details the operation of the Prime system. Miller explained that he began keeping the log after his initial problems with the system.

At the time the contract was signed, Prime had the inside track to be the company selected by Quality in its desire to become a single-vendor shop, according to Miller. Quality is now relying on an IBM System/38 and, according to the suit, "has experienced almost no downtime ... since converting ... On the average, Quality has experienced less than 10 minutes per week in downtime with its IBM system and has realized substantial gains in production and savings in personnel costs."

Prime refused to take back the Information 5000, which Quality bought for $262,500 and eventually sold through a used equipment broker for $145,000. A $3,625 brokerage commission left Quality with a loss of $126,000, according to the suit. Added to that was approximately $200,000 in additional expenses incurred in trying to make a go of the Prime system, the suit contends.

University Charges Nine in DP Fraud

(Continued from Page 1)

defendants in the suit, as are Vickie D. Cannon, president of Virtual Computing Systems; Kimberly S. Newton, an SIU employee, who is also allegedly known as Brooke Channing, president of Nova; and C. Collins Carroll, president of Angelina Computer Sales, who was the brother-in-law of another defendant, E. Hubert Massey, at the time of the transactions.

The three companies reportedly were operated solely to conduct business with the university. Illinois state law does not require competitive bidding for the purchases outlined in the suit.

However, Shari R. Rhode, the chief trial counsel for SIU's Carbondale campus, noted that the university has since instituted regulations requiring competitive bidding for computer purchases.

Although Bateman left SIU in 1981, the alleged computer scam was not uncovered until 2½ years after his departure. According to Rhode, evidence of fraud surfaced after Bateman's successor had an audit taken of the university's computer equipment and expenditures. "Certain questions arose" that eventually led to the filing of the suit, she said.

The suit cites several instances in which equipment was purchased or leased via a third party at inflated prices rather than directly from the vendor, which would have been more cost-effective. It also accuses Bateman of pocketing $13,300 in fees for services performed by SIU's computer center for a Texas clinic and of stealing almost $3,000 from funds designated for a nonprofit account he established for the support of the Computer Services Department.

Also, three other defendants are accused of contracting to perform services for the university that were never rendered while they were full-time employees or graduate students at two other southern universities. Bateman and George A. Flummer, a former assistant center director of computing services, allegedly deceived the university in their hiring recommendations of the three.

During their "employ," the three defendants are alleged to have collected a total of $71,700 in salaries in addition to fringe benefits, travel and other expenses.

As a result of the pending SIU suit, Bateman has resigned from the University of Maryland, where he became the assistant vice-president of general administration after leaving SIU. The post was offered to him by former SIU President Warren Brandt, now vice-president for general administration at the University of Maryland.

Bateman, who could not be reached for comment, has reportedly denied that he was asked to leave the University of Maryland and maintained that Brandt asked him to stay. He was quoted as saying his effectiveness had been reduced and he did not want to cause any problems for the university. He reportedly plans to become a private consultant in either Maryland or Texas.

NCL Data Head Pleads Innocent In Hitachi Case

SAN JOSE, Calif. — The head of a small Silicon Valley electronics company last week became the only defendant not to plead guilty in the IBM vs. Hitachi Ltd. trade-secrets theft case.

Tom Yoshida, president of NCL Data, Inc. in nearby Santa Clara, pleaded innocent to charges of conspiring to transport stolen IBM technology. Through his attorney, Yoshida indicated his readiness to stand trial beginning May 16.

The unexpected plea was entered May 2 before federal Judge Spencer Williams and set Yoshida apart from the rest of the defendants in the Hitachi side of the IBM industrial espionage case. Altogether, the legal wrangle involving IBM and the Tokyo-based electronics giant has resulted in the filing of criminal charges against 13 Hitachi employees or associates, all of whom, except Yoshida, have pleaded guilty.

In protesting his innocence and choosing to take his case to trial, Yoshida has virtually guaranteed the eventual exhibition of some currently secret Federal Bureau of Investigation videotapes, which allegedly show the defendant engaging in a criminal conspiracy. The recordings were made clandestinely as part of a seven-month federal undercover investigation into a Japanese plot to steal proprietary IBM systems technology and transport it out of the U.S. The sting operation yielded indictments against Hitachi, Mitsubishi Electric Corp. and more than 20 of their employees or suspected agents.

Mass. Crime Bill Classifies Electronic Data as Property

BOSTON — A piece of legislation that sponsors hope will encourage Massachusetts businesses to prosecute computer criminals more aggressively is nearing approval in the Criminal Justice Committee of the commonwealth's House of Representatives here.

The bill would amend the state criminal code to classify electronic impulses as property, opening the door for offenders to be prosecuted under state larceny statutes for the value of information that is recorded electronically.

The bill is in its third reading in the House Criminal Justice Committee after being given a reading on a voice vote without debate last week. It is intended to fill "a rather broad gap [in the law] that needs to be addressed," according to Rep. Paul White (D-Boston), chairman of the committee and the bill's cosponsor.

"This will protect the computer industry substantially because it will not be exposed to potential losses [since] our law did not cover areas like this," White said. He noted that losses from theft of computer data are "awfully hard to get because the companies seem hesitant to talk too much about being ripped off on a regular basis. But we get the feeling that there has been substantial loss over the years."

White said the matter gained legislative attention after a 1981 state Supreme Court decision that a person who stole a magnetic tape could be prosecuted only for the value of the tape itself, not the electronic impulses contained on it.

The bill will go to the House floor after the third reading. "I think it will pass," White said. "We just have to engage in some education with some of our colleagues who get confused about something as highly technical as this."

ICCA Conference To Start Next Week

HOUSTON — The Independent Computer Consultants Association (ICCA) will hold its 1984 annual conference here May 16-18.

Founded in 1976, the ICCA is a professional association for computer consultants representing some 1,000 firms.

The conference registration fee is tentatively set at $150 for ICCA members and $200 for others. The association can be reached through Box 27412, St. Louis, Mo. 63141.

Ada Development Systems Combine Rolm Compiler With DG Superminis

By Lois Paul
CW Staff

WASHINGTON, D.C. — A group of Ada software development work center systems that combine Rolm Corp.'s Ada software and Data General Corp.'s family of 32-bit Eclipse MV computers was unveiled here last week by the two firms. Both vendors will offer the Ada Work Center systems under a joint marketing agreement.

DG and Rolm also announced an agreement under which current users of the superminis can acquire Rolm's Ada compiler and Ada Development Environment (ADE) software from DG.

The multiuser Ada Work Center systems are intended for developing, testing and debugging Ada applications. Because Eclipses are program- and I/O-compatible with Rolm's MSE/800 military computers, debugged Ada applications can be run on either DG or Rolm processors.

The Ada compiler is said to be a full Ansi-standard version of the language sponsored by the Department of Defense (DOD). It reportedly has been tested using DOD validation tests and is expected to undergo formal validation by the Ada Joint Program Office in the second quarter of 1983.

The ADE software included with the Ada Work Center is an integrated set of Ada tools for application program design, development, testing and documentation.

Three Ada Work Center systems will be offered in three configurations, based either on DG's Eclipse MV/4000, MV/8000 or MV/10000 supermini. The systems may be expanded by the addition of memory, peripherals, terminals and software.

The MV/4000-based, entry-level Ada Work Center system consists of the ADE, which includes the Ada compiler, 147M to 554M bytes of disk storage, a magnetic tape unit and a system console.

The high-end system is said to be configured for a larger number of Ada workstations and 8M bytes of main memory.

The Ada Work Center will be demonstrated at the National Computer Conference next week in Anaheim, Calif. Delivery of the systems are scheduled for the last quarter of 1983.

Prices range from $158,965 to $409,665 for the basic system, including the first year of software support.

The license for just the ADE software, including the Ada compiler, is available for users of Eclipse MV and Rolm MSE/800 processors. It is priced at $82,800; the software is available for delivery 30 days from receipt of order.

Additional information about the Ada Work Center systems can be obtained from Rolm at One River Oaks Place, San Jose, Calif. 95134, or from DG at 4400 Computer Drive, Westboro, Mass. 01580.



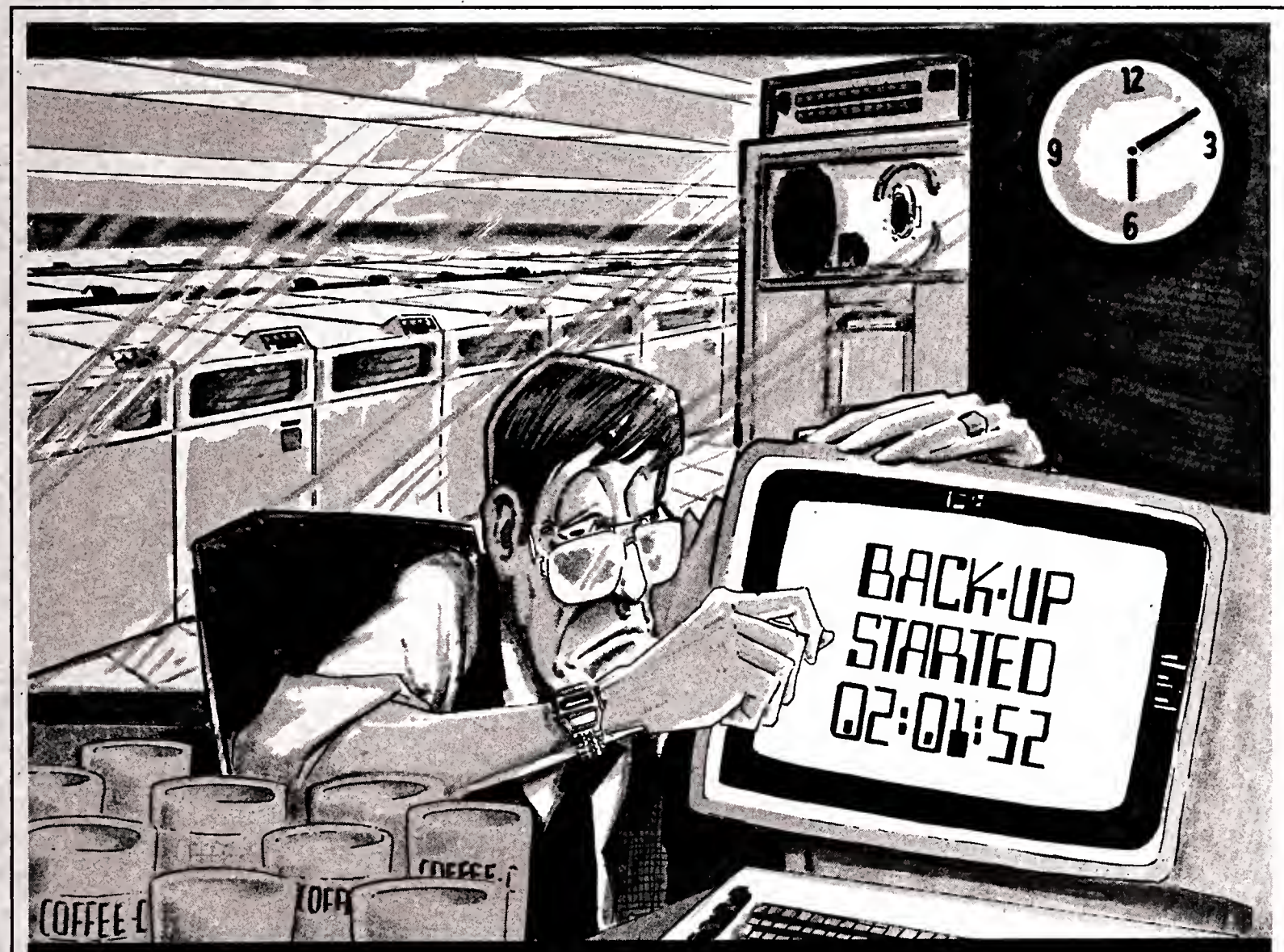
Dennis Paboojian (left), vice-president and general manager of Rolm's Mil-Spec Computer Division, and Bob Miller, senior vice-president of DG's Business Division, pose with an Eclipse MV/4000-based Ada Work Center at the 32-bit development system's introduction last week.

Security Workshop Slated for July 18-19

NEW YORK — The Computer Security Institute will hold a two-day computer security workshop here on July 18-19 focusing on the concerns of users of IBM and plug-compatible processors.

Sixteen half-day workshops are scheduled. Four optional full-day seminars are slated for July 20.

The program costs $495 from the Computer Security Institute, which is located at Department IP, 43 Boston Post Road, Northborough, Mass. 01532.



Are your backups running into your prime shift?

Incremental Backups can reduce your backup time by 50 to 80%.

User can specify that ABR is to backup changed data sets only until a limit count is reached. At that time, ABR will interpose a full volume dump. This technique greatly reduces backup time while providing a periodic image of the entire volume.

- Automatic Volume Reconstruction
- Automatic Tracking of Backups
- Preallocation
- Unlike Device Support

FDR™
AUTOMATIC BACKUP & RECOVERY™

Available for IBM OS/VS & MVS
90 Day Free Trial

INNOVATION DATA PROCESSING
970 Clifton Ave., Clifton, NJ 07013 • 201—777-1940

Poll Finds Women Earning More in OA, Sales

By Susan Blakeney
CW Staff

WASHINGTON, D.C. — Although women's salaries generally trail behind those of men in the same DP occupations, women are outpacing men in two fast-growing areas — office automation and computer equipment sales.

Such were the findings of a survey recently released by Women in Information Processing (WIP), headquartered here. The survey, conducted last year, looked at 30 position categories representing 12,800 female managers and professionals from 1,000 firms throughout the U.S. and Europe.

The salary survey showed women faring better financially when they market high technology, where they outearn men by as much as $18,000 annually, and when they work as DP auditors, where they earn slightly more than men.

Blurred salary lines between the sexes occur in positions such as vice-president of DP or management information systems, where women earn the same or slightly less than men. The same is true for female senior analysts, project leaders and consultants, according to the survey's findings.

Women still earn less than male information systems directors, systems/programming managers and operations managers.

Purpose of Study

The purpose of the study, according to Elizabeth Ebitt, WIP spokeswoman, is to aid women in the career-planning process in information processing industries. "The report is more than a snapshot of past salary trends," she commented.

Furthermore, Ebitt stated, "One of the difficulties with a project such as this is that the target moves so quickly. For example, we found many fairly junior individuals in new, unstructured positions within the microcomputer arena earning higher salaries than the majority of vice-presidents in the mainframe arena," she said.

The survey study pointed out that fewer than five years ago, one industry expert "could see no earthly reason why anyone would buy a personal computer." Today, the microcomputer marketplace is exploding, and WIP's study is urging its constituents to take heed of the following trends:

- Noncomputer professionals in the user environment (such as executives, managers, secretaries and salesmen) have a unique, short-lived opportunity to become knowledgeable in the new technology, thereby accelerating their careers significantly.
- Computer professionals in the user environment (programmers, data base management systems specialists, analysts and information system designers) have an opportunity to expand their horizons to include such areas as communications, networking, graphics, distributed processing and office automation technologies.
- Totally new and high-paying opportunities have already surfaced with respect to integrating 16-bit microprocessor operating systems with existing software currently running on mainframes or minicomputers.
- The key areas to be in now are software development, marketing, customer support and consulting. Jobs in these areas will continue to emerge and outpace other information-industry jobs.

Copies of the WIP survey are available for $4 from WIP headquarters, Lock Box 39173, Washington, D.C. 20016.

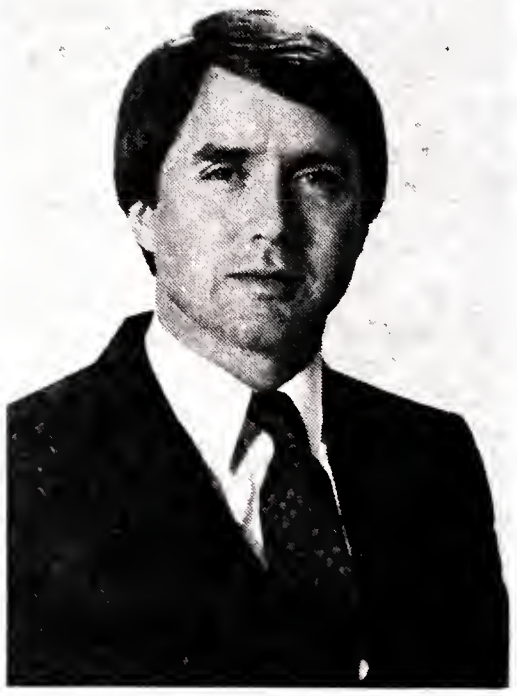
	ALL INDUSTRY			ALL INDUSTRY FEMALES			WIP FEMALES		
	20%	Median	80%	20%	Median	80%	20%	Median	80%
Vice-President, DP or MIS									
Small	$34	$40	$48	$33	$38	$43	$33	$40	$48
Medium	37	48	60	34	43	53	37	47	60
Large	40	58	86	38	53	68	40	56	84
Information Systems Director									
Small	28	41	47	24	36	42	27	39	45
Medium	32	47	59	26	41	50	32	45	52
Large	38	57	81	31	48	61	37	53	74
Systems/Programming Manager									
Small	25	35	40	23	32	36	23	34	38
Medium	31	42	53	26	37	46	30	41	50
Large	35	47	58	31	41	52	33	45	57
Operations Manager									
Small	23	27	30	19	23	26	20	25	28
Medium	24	31	37	21	26	33	23	29	35
Large	25	39	48	24	35	42	25	37	46
Nonmanagement Positions									
Systems Programmers									
6 Months to 1 Year	18	25	30	16	24	27	16	24	28
1 Year to 2 Years	20	27	33	18	26	30	18	26	30
2 Years to 4 Years	23	30	35	21	28	33	21	28	33
Over 4 Years	28	37	44	25	34	40	26	35	41
Data Base Specialists									
6 Months to 1 Year	19	25	30	18	23	29	18	24	30
1 Year to 2 Years	22	27	32	21	24	30	21	27	31
2 Years to 4 Years	23	31	38	22	27	36	22	31	36
Over 4 Years	27	38	46	26	33	42	26	37	44
Commercial Programmers/ Analysts									
6 Months to 1 Year	15	20	23	13	20	22	14	21	24
1 Year to 2 Years	16	22	28	15	22	28	16	23	28
2 Years to 4 Years	18	25	33	18	25	32	18	26	33
Over 4 Years	21	30	37	19	28	34	21	31	36
Engineering/Scientific Programmers/Analysts									
6 Months to 1 Year	16	20	26	14	19	25	15	21	26
1 Year to 2 Years	17	22	27	16	22	26	16	24	27
2 Years to 4 Years	20	25	32	18	24	31	20	27	31
Over 4 Years	25	31	37	23	30	35	25	32	36
Office Systems Programmers/Analysts									
6 Months to 1 Year	14	20	27	12	18	24	14	21	26
1 Year to 2 Years	19	26	32	18	23	28	19	25	32
2 Years to 4 Years	22	30	36	20	26	32	23	30	38
Over 4 Years	26	36	46	22	33	41	27	37	51
Communications Programmers/Analysts									
6 Months to 1 Year	19	25	30	17	22	27	19	25	30
1 Year to 2 Years	21	27	38	19	24	32	20	27	37
2 Years to 4 Years	23	33	42	20	30	37	23	34	43
Over 4 Years	26	40	47	22	36	41	25	41	48
Machine/Computer Operators									
6 Months to 1 Year	12	15	17	12	15	17	12	15	17
1 Year to 2 Years	14	17	19	14	17	19	14	17	19
2 Years to 4 Years	16	18	20	16	19	20	16	19	20
Over 4 Years	17	19	21	17	20	22	17	19	22

Source: WIP

Annual Compensation in Thousands of Dollars

Managers on the Move

EDWIN A. WHITE has been promoted to vice-president of computer operations for Federal Express Corp. in Memphis, Tenn. He will be responsible for planning, organizing and controlling the company's multiple data processing centers, including installation of new equipment and the operation of computer and data communications systems.



Edwin A. White

White joined the company in 1978 as a manager of technical services in the Computer Operations Department.

White served in the Army for four years and graduated from the Defense Language Institute with a major in Persian. He attended the University of Virginia and received a degree in data processing from State Technical Institute in Memphis.

•••

JOHN A. MALINSKY has been appointed an assistant vice-president at Arkwright-Boston Manufacturers Mutual Insurance Co. in Waltham, Mass.

Malinsky joined Arkwright-Boston in 1982 as manager of technical services. For the previous six years, he was manager of technical support at Ludlow Corp. He has also served as data base administrator at Stride Rite Corp., a DP consultant at Systemation, Inc. and a programmer at Bostonian, Inc.

Malinsky holds an associate's degree in computer science and data processing. He has also studied business administration at Boston State College.

Corrections

"Omegamon/MVS Enhanced for IBM" [CW, May 2] noted that users of Candle Corp.'s Omegamon/MVS and Dexan/MVS software will receive support for these products under IBM's MVS/XA operating system at no additional cost. The vendor has since clarified this by stressing that only CPUs that were licensed for Omegamon/MVS and Dexan/MVS prior to July 15, 1982 will be provided MVS/XA support at no additional cost.

In "Btas/1 Works with Series/1" [CW, April 11], it was reported that with Business Management Systems, Inc.'s Btas/1 software, applications programs require a 36K-byte control block. Applications programs actually require a 36-byte control block with the Btas/1 software.

In "Off the Press" [CW, April 11], the title of James Martin's book on software engineering methodology was given as *Program Design Which Is Probably Correct*. The correct title is *Program Design Which Is Provably Correct*.

The Promptdoc Documentation Methodology described in "Methodology Boosts Publications Group's Output" [CW, March 28] was incorrectly identified as being sold by Progressive Communications, Inc. of Colorado Springs, Colo. The methodology is sold by Promptdoc, Inc. of Colorado Springs.

In "Tape System Boasts Error-Free Transmission" [CW, March 21], it was incorrectly reported that an 8½-in., single-density system runs at 800 bit/in. It should have said the tape format is nine-track 800 bit/in. Also, it was reported that the Taptran interface costs $2,000; the facsimile interface costs $2,000.

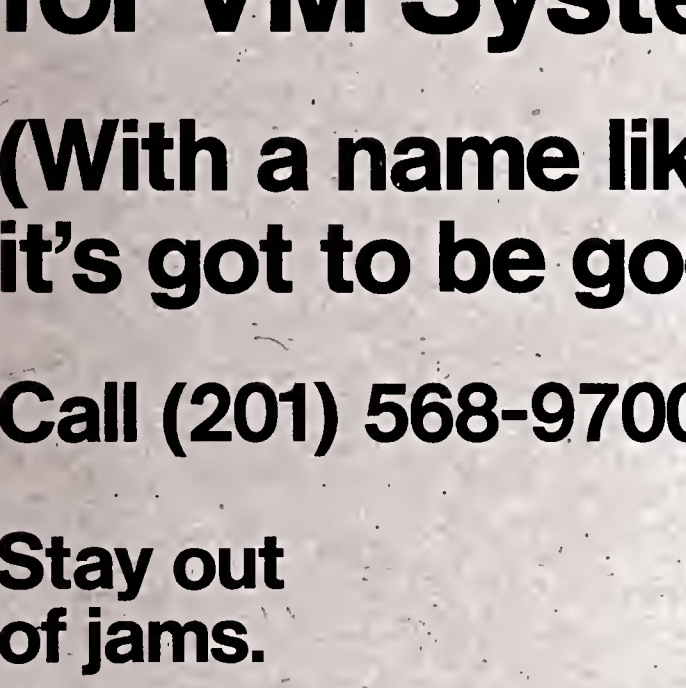
SYBACK:

Meet our new "Synchronized High-Performance Backup & Restore for VM Systems."

(With a name like that it's got to be good!)

Call (201) 568-9700.

Stay out of jams.



syncsort INC.

Speaking of names, maybe we ought to change ours to the "Bureau of Missing Software Programs."

Last year, for example, we brought you the first high-performance sort program for VM, the fastest growing operating system. SyncSort CMS became an overnight success. It didn't use many resources – machine or human – and it was a pleasure to use. Today it has over 350 users.

Now we've broken through another VM barrier. SYBACK is the first advanced-design, flexible Backup, Restore, and Copying program for VM. It too uses minimal resources, and it renders all other VM Backups obsolete as of today!

THE BAD OLD DAYS: Most of the VM Backups now in use are low-level programs, to put it charitably. (Subterranean might be a better word.) They simply use too many machine resources. And they require too much manual assistance from the operations staff.

As a result, much of the Backup, Recovery and Copying done in the nation's VM centers is just plain lousy. It's often done haphazardly...sporadically...or not at all. Heaven only knows how much this has cost in terms of destroyed data, incomplete records, and damaged reputations.

GOODBYE TO MICKEY MOUSE: SYBACK changes all that. Here's what it can do for you in the three areas that really matter:

(1) PERFORMANCE. As a result of new and unique access methods, SYBACK uses far fewer computer resources than any other VM Backup. Compared to IBM's DDR, it will save you:

- **50% in Elapsed Time;**
- **30% in CPU Time;**
- **75% in Start I/Os.**

(2) CAPABILITIES. SYBACK is unique in the range and sophistication of its features. Things like:

- **Automatic backup based on CP directory;**
- **Stand-alone restore capability;**
- **Incremental backup facility;**
- **Catalog of backup operations;**
- **Multi-tasking and execution under CMS;**
- **Interactive command processing;**
- **Standard-label tape support;**
- **Callable by user programs;**
- **DASD to DASD conversion or copying.**

(3) SERVICE. We're well and favorably known for providing fast, helpful service. More than 85% of all customer inquiries are resolved within 24 hours.

If you'd like to reduce the human and machine resources that go into VM Backup and Copying, give us a call. We'll introduce you to our tight-fisted SYBACK. It's a real chip off the old MacSyncsort block!

Syncsort Incorporated 560 Sylvan Ave., Englewood Cliffs, N.J. 07632

PE Scientific Desktop Boasts Color Graphics

By Susan Blakeney
CW Staff

OCEANPORT, N.J. — In addition to announcing its Model 3250 processor, Perkin-Elmer Corp. today introduced a scientific desktop computer that boasts color graphics and optional local mass storage capabilities.

The Model 7500 Scientific Computer, the newest member of PE's Series 7000 Professional Computer family, is based on Motorola, Inc.'s MC68000 16-bit microprocessor and is said to be fully compatible with PE's Series 3200 line of superminicomputers. It is intended mainly for multiuser program development, data acquisition, data reduction and graphics display in both the laboratory and the office, a PE spokesman said.

The Model 7500 is available in both color and monochrome versions. Each includes two 5¼-in. floppy disk drives with a combined formatted storage capacity of 640K bytes; the vendor's Idris operating system, reportedly compatible with the Unix operating system developed by Bell Laboratories; two RS-232 ports; an Ascii keyboard with 32 software-defined special function keys; a numeric pad; cursor and screen control keys; a Basic interpreter; and keyboard overview .

The monochrome version of the system includes 416K bytes of memory and a video module with 13-in. monitor. It sells for $8,400.

The color version has 640K bytes of memory and a video module with a 13-in. monitor reportedly capable of displaying any combination of 16 colors out of a palette of 27, the PE spokesman noted. It costs $10,800.

The graphics portion of the system consists of a color bit map that is said to allow colors to be changed instantly, 256 by 720 pixel resolution, and split screens with up to eight windows.

Optional hardware features include a 10M-byte Winchester disk, an IEEE-488 interface, two additional RS-232 ports and a black-and-white or color graphics printer.

Language support for the Model 7500 includes Ansi Fortran 77, Basic and C. A file transfer feature with RS-232 connection to and from other Model 7500 workstations or to and from the vendor's Series 3200 superminis will be available in September, the vendor said.

Basic, Fortran and C programs running on other computer systems may be transported to the PE workstation, its vendor said. Included with Idris is a menu-driven help system for obtaining on-line documentation on the operating system.

The 7500 is available "a la carte" and in two specially packaged configurations. The Programmer's Workstation includes the basic monochrome version of the Model 7500, 10M-byte Winchester disk, Fortran 77 and C compilers and text processing software. This configuration costs $12,400.

The packaged Scientist's Workstation includes the color version of the Model 67500, IEEE-488 interface, 10M-byte Winchester disk, Fortran 77 and C compilers and word processing software. This package is priced at $15,100.

The systems are available immediately from the vendor at 2 Crescent Place, Oceanport, N.J. 07757.

PE Expands Supermini Line Downward

(Continued from Page 1)

timer feature and a loader storage unit, PE said. The board is said to allow any line to be synchronous or asynchronous; it transmits data at rates up to 19K bit/ sec. The parallel printer port operates at speeds up to 1,200 line/min.

An optional third board includes up to 3M bytes of memory and reportedly enables users to expand the system to its maximum memory size of 4M bytes. Memory is expandable in increments of 1M, 2M or 3M bytes, a spokesman said.

The system's small size is attributed to a number of new technologies, according to PE. For instance, the memory board utilizes "leadless carrier packaging" to reduce the physical size of the memory substantially, the PE spokesman noted.

The MPC saves space by using a series of on-board microprocessors to implement commonly used I/O functions. Very large-scale integration and large-scale integration technology further enhance processor reliability by permitting higher density packaging on each board and reducing the number of board intraconnects, the spokesman added.

Integral to the processor is a Memory Manager that reportedly provides memory segmentation, relocation and protection under operating system control. This feature provides translation of a program address into a physical memory address and ensures that a task can exist in a fully protected environment, the spokesman noted.

Other features built into the system include error-checking and correcting memory, a hardware error logger, power fail/auto restart, illegal instruction traps, CPU and MPC board self-test and the capability for remote diagnostics, PE said. Since the system is compatible with other PE computers, users reportedly can develop applications on larger PE systems and then migrate them to the Model 3205 for program execution, the vendor pointed out.

Using the vendor's multitasking OS/32 operating system, the Model 3205 runs all PE 32-bit languages including the universally optimizing Ansi 77 Fortran VII, Pascal, Cobol, Basic, Cal Macro, RPG-II and Coral 66. A range of utilities and third-party application software is also available for this system, PE said.

A packaged configuration, including the 3205 processor with 512K bytes of MOS memory, 25M-byte fixed and 25M-byte removable disk drives, eight communications lines, a line printer port, memory error logger, loader, clocks, watchdog timer, power supply and disk controller costs $24,950.

Additional memory for the 3205 costs $4,900 per 1M byte for 1M byte to 2M bytes, $4,100 per 1M byte for 2M bytes to 3M bytes and $4,000 per 1M byte for 3M bytes to 4M bytes.

The system is slated for delivery in October from PE at 2 Crescent Place, Oceanport, N.J. 07757.

Travelers Becomes First to Bring Up MVS/XA

(Continued from Page 1)

er, the firm "can define up to four times as many devices," Reynolds said.

IBM approached Travelers at the beginning of 1982 with the prospect of becoming an MVX/XA beta test site. Hoping to gain at least 1M byte of virtual storage by getting MVS/XA ahead of time, the firm agreed. "As it turned out, we got 2M bytes, twice as much as we had planned on, and it has been excellent," Reynolds reported.

Approximately 100 man-months were assigned to the conversion of the 3081 Model K to MVS/XA. However, before the system could move to XA, it had to be upgraded first to MVS/SP 1.3, and the latest releases of products, such as TSO/E (Extensions) and IMS 1.2, had to be installed.

But the most difficult part of the project — because of sheer numbers — was converting the software packages from independent vendors that were running on the 3081 Model K.

The process of bringing in new releases of both the IBM and the independent software was speeded up by the ESP environment. "We would probably have gone to all of these versions in a six-month to a year time frame. We compressed that down into a smaller window and we converted it all," Reynolds said.

Migration from MVS/SP 1.3 to MVS/XA was relatively painless for Travelers, according to Reynolds. "Excluding the third-party manipulation of ESP agreements and allowing them to bring in new code, we had no user fallout from it. No application programs, no application JCL and no application assembler code needed to be changed. It truly was very, very smooth."

Moreover, he added, "about 15% of our authorized assembler programs — which are operating system-type utilities or operating system-type code — needed to be changed." He attributed part of the ease of the migration to the conversion notebook provided by IBM.

Reynolds said benefits from conversion to MVS/XA included an increase in the operating system's local area from 5M bytes to around 7M bytes, "which allows us to run a much bigger IMS and more TSO users on a host." In addition, Travelers is beginning to add more IMS terminals and TSO users.

While memory usage and paging is up, an increase in throughput has not been detected, Reynolds said. There has been some increase in CPU overhead, but not enough to concern him. The operating system has provided improvements in the way I/O is handled, which has helped, and response time is about equal to that afforded by MVS/SP 1.3.

"We did not have to do anything one way or the other to tune the system for XA. We brought it up with the same parameters that we brought it up for SP 1.3 and it is running fine," he said.

Reynolds said the large conversion effort from 3350 architecture to the 3380 controllers required to take advantage of MVS/XA's dynamic path allocation facility has been very smooth. "The hardware seems to be extremely stable, and the response time is fantastic," he added.

To date, MVS/XA has been transparent to users at Travelers, Reynolds reported. "They used to be concerned when they logged on whether they were running under XA. What we are finding now is that they do not even bother to ask. They are up; they are running; they don't notice any difference. That is really the way we like it."

Insurer Decides to Hold Off on 31-Bit Addressing

HARTFORD, Conn. — Travelers Insurance Co. is not planning to convert its programs to take advantage of IBM's MVS/Extended Architecture's (XA) 31-bit addressing capability "until we can be sure we have XA on all of our systems in the wing," Dave Reynolds, assistant director of Travelers' Computer Science Division, explained recently.

In the past, the firm limited the regional size of programs to 4M bytes; but this will be unnecessary with MVS/XA. "You get 2G bytes, and we are only using 16M bytes. So almost all of it could be the local or private area," Reynolds said. "It would allow for 1G byte of storage for a local area for the system to use and you wouldn't have to concern yourself about running out of local area."

Travelers plans to migrate to the new versions of MVS/XA and its related products, which will be available this June. The goal is to get enough virtual storage relief so "we don't have to talk about it anymore," Reynolds said.

In addition, the insurer is anxious to add the virtual storage tracking facility that will be available with the enhanced version of the Resource Management Facility.

Look how easy it is to use your INTELLECT™

I WONDER HOW ACTUAL SALES FOR LAST MONTH COMPARED TO THE FORECASTS FOR PEOPLE UNDER QUOTA IN NEW ENGLAND.

NAME	1982 SEPTEMBER SALES	1982 SEPTEMBER ESTIMATED SALES	CHANGE	% CHANGE
SMITH	$52,570	$55,064	2,494-	4.53-
JONES	$83,596	$85,360	1,764-	2.07-
ALEXANDER	$52,546	$55,483	2,937-	5.29-
ADAMS	$53,837	$56,357	2,520-	4.47-
McNEIL	$95,760	$96,929	1,169-	1.21-
McKAY	$36,448	$39,694	3,246-	8.18-
BERGER	$85,691	$90,515	4,824-	5.33-
COLONDER	$75,762	$77,448	1,686-	2.18-

```
PRINT   LNAME, 82-SEP-ACT-SALES, 82-SEP-EST-SALES,
        82-SEP-ACT-SALES - 82-SEP-EST-SALES,
        (82-SEP-ACT-SALES - 82-SEP-EST-SALES) / 82-SEP-ACT-SALES

IF      REGION = 'NEW ENGLAND' AND
        82-YTD-ACT-SALES < 82-QUOTA
```

With Intellect, all you do is type a simple question—any way you want

Before Intellect, you had to use a complicated query language like this

Intellect is the only *true* English-language query system. It enables users to question the computer in everyday, conversational English.

Other query and retrieval systems claim this ability, but prove to be merely English-*like*. They require a thorough knowledge of special syntax, complex query sequences, and rigid formats and codes before a user can retrieve any meaningful data.

Intellect, however, employs the technology of Artificial Intelligence to understand even the complex pronoun references and incomplete sentences that we all use in conversational English. Executives can access data themselves—more easily than ever before—without learning *any* jargon or "computerese". It's so easy to use it doesn't even have a training manual!

All the user has to do is type in a simple question in plain, informal English. Intellect almost instantly translates the request and optimizes the retrieval of data from the database. The answer will appear in seconds.

Executives don't have to wait for information, and the DP department is freed from having to respond to management's requests for reports. Tedious, repetitive report generation becomes a thing of the past.

Intellect isn't just for simple questions. The system can relate information from several files to respond to a query, so that a request doesn't have to be confined to a single file. Users can compare different sets of data with one question, as when comparing actual sales figures with projections. Managers make better decisions with all this information instantly available at their fingertips.

Many non-DP people think it's always been this easy to get information from a computer. That's why they get so frustrated when they discover that they have to learn a complicated formal query language in order to retrieve the data they need. If they have any experience working directly with a computer, they'll be amazed and relieved at how easy it is to use Intellect—even to get the answers to complex questions. Intellect makes the computer the easy-to-use tool it should have been long before now.

Eighteen months ago true English-language data retrieval was not even possible in everyday commercial applications. Although Intellect is a recent and dramatic development, it is already hard at work at over 100 installations in Fortune 500 companies. It has been hailed by publications such as *Business Week* and *Fortune* as the first product to put Artificial Intelligence to practical commercial use. Intellect is used in a wide variety of businesses, such as manufacturing, banking, insurance and retailing—because the system incorporates a lexicon tailored to the way your company does business.

Intellect's ability to understand English is so unique that leading software companies have arranged to integrate it into their product lines. Intellect is marketed by Cullinet Software under the name "On-Line English." Management Decision Systems offers Intellect as "ELI—English Language Interface." InSci markets Intellect as "GRS EXEC". Intellect also interfaces directly to ADABAS, IDMS and VSAM, as well as dealing with sequential files.

You don't have to learn a complex formal language to talk to your computer any more. Intellect already speaks *your* language. We'd be delighted to hear from you.



Fleet Financial Group is a four billion dollar diversified financial services company headquartered in Providence, R.I. which has created one of the most advanced Information Centers in the U.S. Here, Sandra R. Hirsh, Information Center Analyst for Fleet Information, Inc.,* shows Thomas G. Dunn III, Assistant Vice President of Fleet Credit Corporation** how easy it is for an executive to use Intellect to work with the information center database.

*Fleet Information, Inc. is a subsidiary of Fleet Financial Group
**Fleet Credit Corporation is a subsidiary of Fleet National Bank

ARTIFICIAL INTELLIGENCE CORPORATION
100 FIFTH AVENUE WALTHAM, MASS. 02254 (617) 890-8400

Experts Clash Over Feasibility of RFI Espionage

(Continued from Page 1)

thought to be safely hidden in computer systems. Others, however, say the idea of monitoring RFI to steal information is impractical — and downright ridiculous.

RFI is not a newly discovered phenomenon; DP shops have reported picking up signals from external sources, such as radio transmitters and microwave transmission systems, which have caused mysterious hardware and software glitches [CW, July 19].

Those who are worried about the electronic espionage potential of RFI, like Nye, point to the more sophisticated and cheaper computer systems and the improved listening devices such as spectrum analyzers and directional antennas available today. They have expressed concern that it could become relatively easy to pick up and use radio waves from computer systems.

'Robert H. Courtney, currently a private consultant based in Kingston, N.Y., and formerly security director at IBM, maintains that the NSA's secret standards could wind up costing vendors "untold millions to fix a problem that doesn't exist. It's a magnificent myth." '

So has the National Security Administration (NSA), which a spokesman said is actively soliciting vendors to make spy-proof components for highly classified government applications. The NSA's unclassified code name for "compromising emanations" is Tempest. However, the actual definition of a "compromising emanation" is classified.

The NSA's standards for protecting against Tempest are also classified. But Nye said the NSA standards involve shielding computer systems and terminals with a radio wave insulator, such as a wire mesh, or building cabinets of an insulating material.

Robert H. Courtney, currently a private consultant based in Kingston, N.Y., and formerly security director at IBM, maintains the NSA's secret standards could wind up costing vendors "untold millions to fix a problem that doesn't exist. It's a magnificent myth."

Nye does not agree. In fact, he is worried that even those computer sites which have installed data encryption devices would not be safe from RFI interception. It is conceivable, Nye said in a recent interview, that unencrypted information could be scooped out of the atmosphere; the RFI from sensitive information displayed on a CRT screen, for example, can be picked up from up to 100 yards away. And, he contended, someone with a sophisticated directional antenna could pick up RFI from a single CRT terminal in a crowded office building.

However, other security experts maintained that the extreme difficulty of picking up specific RFI signals makes this an unlikely scenario. Courtney believes it would take a truckload of mainframe processors and very sophisticated listening equipment to monitor RFI emanations from a moderately sized company.

Furthermore, Courtney noted, the RFI monitoring technique is passive. The eavesdropper has to wait until someone inside the target company decides to use the desired information. That process, Courtney said, could take weeks or even months of monitoring.

It is much easier and much cheaper, Courtney said, for a corporate spy to bribe someone within the company to steal information. It is also easier to tap directly into the target company's computer system and gain immediate access to corporate secrets — or to monitor the telephone calls of top executives.

Moreover, figuring out which signals to monitor in a large company can be a complex task, noted Jim Schweitzer, systems security technology manager at Xerox Corp. in Stamford, Conn. "A very sophisticated millionaire could do it," Schweitzer said.

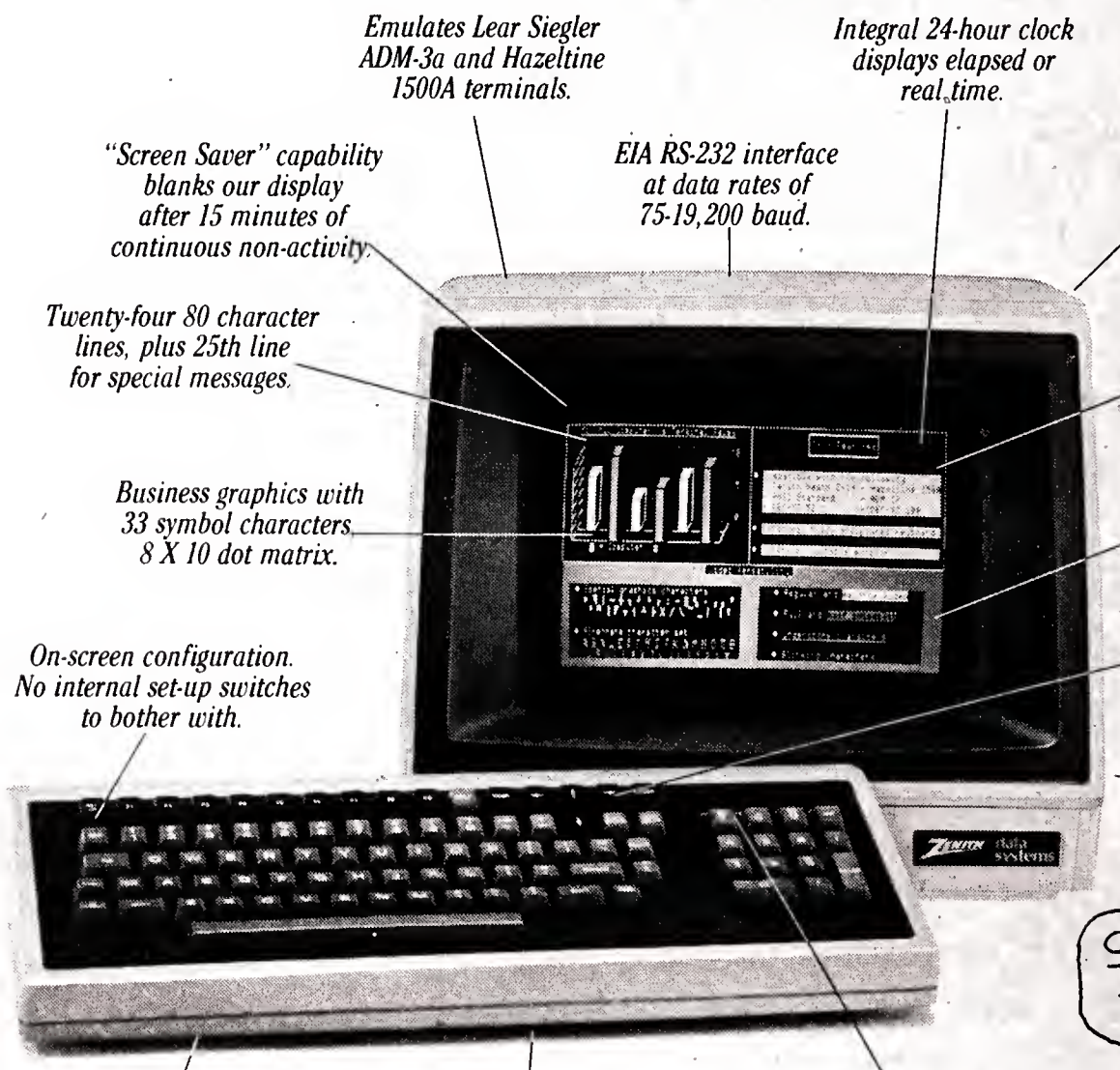
A spy trying to monitor a mainframe computer system, for example, would have to keep track of dozens of terminals and tape and disk drives, he said. That would require a computer system sophisticated enough to pick out the signals given off by those specific devices, weed out hundreds of other emanations and convert the right ones into data.

Even then, Courtney said, interference from all the other electronic devices in the building may distort the desired RFI to an unusable state.

Nye, however, said that a would-be eavesdropper armed with some high-class listening equipment — such as a sophisticated directional antenna — and a microcomputer could monitor one person's CRT terminal in a crowded office building. If he knew the location of the terminal and could identify some of its unique RFI characteristics, the task would be that much easier, he added.

But even assuming the right terminal could be monitored, the would-be spy would then have to sit down and read through reams of meaningless information just to glean a few secrets, Schweitzer said.

Meet the compatible, affordable Zenith Z-29.





Once again, Zenith leads the way! This time with one of the most versatile, yet affordable, video terminals ever produced: the Zenith Z-29.

Not to keep such a talented terminal all to ourselves, we've made it compatible with most existing systems. It can handle just about any software application. And it's priced to meet even the most demanding budgets.

Behind every Zenith product is our regionalized distribution network. This assures you the best in service and support, as well as the fastest possible delivery.

For more information about the new Z-29 and our complete line of video terminals, desktop computer systems, monitors, peripherals and software, see your nearby Zenith Data Systems distributor. Or call (800) 323-5924. In Illinois, call collect (312) 391-8861.

SEE US AT NCC - BOOTH S5000

ZENITH | data systems

The quality goes in before the name goes on.

© 1983 Universal Press Syndicate

MIS Manager, Staff of Seven Hike Output From 75 to 6,900 Programs in Seven Years

By Lois Paul
CW Staff

WASHINGTON, D.C. — What would you say if a management information systems manager told you his DP staff of seven had increased its productivity from 75 to 6,900 internally developed programs in seven years with absolutely no turnover?

Whatever you say — no matter how disbelieving or skeptical — Frank Schlier has probably heard it before. And anyway, the director of information systems for the American Bankers Association (ABA) thinks the results speak for themselves.

How did he do it? Schlier stepped away from his IBM mainframe Cobol and Fortran orientation seven years ago and adopted fourth-generation languages and relational techniques.

Schlier's accomplishment is more impressive in light of the fact that his DP staff is small and light on heavy technical expertise. Only three of his people formerly worked in a systems capacity; the majority are MBAs or accountants.

The ABA is a $50 million trade association to which 90% of U.S. banks belong. It provides its members with information services, handles government relations for them, runs 58 conferences and provides 4,000 products, such as books and cassettes. It also handles 890,000 student records for the American Institute of Banking's education program.

When Schlier first joined ABA seven years ago, experts who were brought in to evaluate costs suggested that 60 to 75 people and one computer would be needed to handle all these tasks. "We took two computers and our staff on one side of the balance sheet. On the other side was the one computer and the staff the experts told us we need to do what we are doing. We end up way ahead," Schlier said in a recent interview, "even if we went to three computers."

He credits a software package called Oliver and a systems development method he is using for the success of his rather unusual department. His design methodology hinges on Oliver, a fourth-generation language developed in 1972 by the Pittsburgh, Pa.-based United Information Systems, Inc. and brought in-house by ABA in 1975.

Schlier's shop is running Oliver on Digital Equipment Corp. Decsystem-10 equipment under the Tops-10 operating system. Communicating with the DEC system and handling office automation and word processing applications are Datapoint Corp. systems tied together in a Datapoint Attached Resource Computer (ARC) network.

Explaining Oliver, Schlier said it lets you sit at a terminal and think you are playing with a simple inquiry language, but it does everything Cobol does in the inquiry language level of difficulty. "With things like new reports, the user expectation becomes three hours instead of three weeks," he said.

Schlier compared Oliver with products such as Information Builders, Inc.'s Focus and Mathematica Products Group, Inc.'s Ramis, but noted the latter packages are just coming out with these capabilities, whereas Oliver has had them since 1972.

Converted to Systems Model

Schlier's design methodology basically has converted the major functions of a business (buying resources, converting them into products or services and selling them) into a systems model. This includes people (customers or staff), institutions, the organization's own management structure, its activities and its stock.

"Then we use relational data sentences to tie that together," Schlier said. "What we have come up with is a model that we can give the systems designer — the basic framework that any system can be designed within."

Using this design method and Oliver, one of Schlier's staff members developed a credit card system that he said does the same things as Master Card, American Express and Visa in two months. "Before I came here, I worked for [Sperry Corp.] and Amtrak. This software is more complicated than anything I ever put in there," he said.

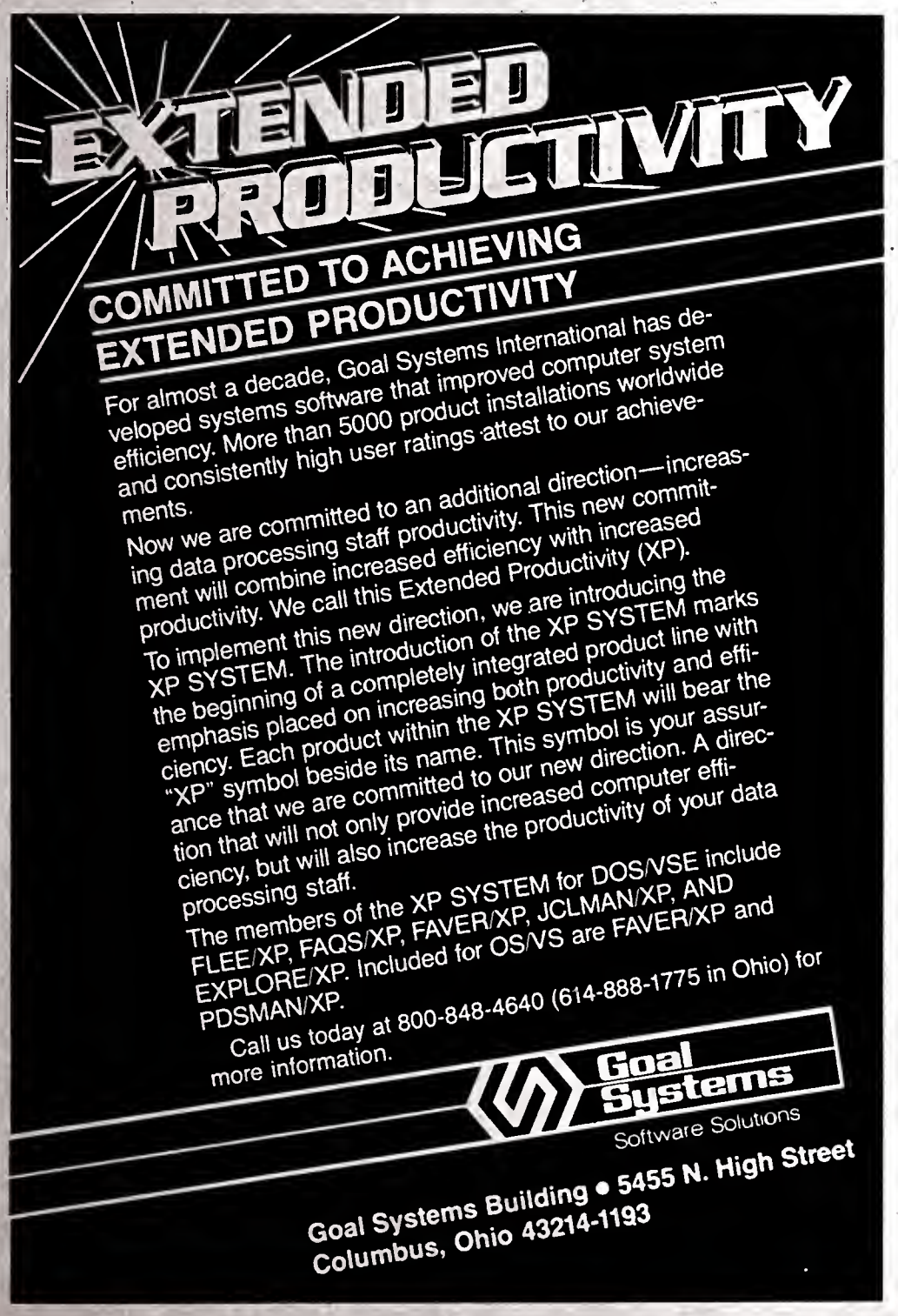
DP professionals who hear about Schlier's installation always ask about the efficiency of the fourth-generation software tools. "What we have found is we use more equipment to do what we are doing, but we use a heck of a lot less people and we also get a lot more out of those people," Schlier said. "The total dollars spent to provide information to the organization we feel is less."

DPMA Meet Set for June 1-3

WILLIAMSBURG, Va. — The Data Processing Management Association's (DPMA) regional conference will be held here June 1-3 under the sponsorship of the Hampton Roads Chapter, which includes the South Central Atlantic states. The conference, whose theme is "Micros in a World of Mainframes," will include a vendor exposition and trade show and eight seminar speakers.

Heading the list of speakers is Joseph Deken, author of *The Electronic Cottage*. John Severin of the Navy Regional Data Automation Command and Bruce Spiro of the Defense Communications Agency will also speak.

A preregistration fee of $95 for members and $115 for nonmembers will be charged for the three-day conference, with further information available from Roger Higgs, Conference Chairman, DPMA Region 8 Conference, P.O. Box 9264, Hampton, Va. 23670.



THERE ARE A MILLION SMART WAYS TO USE A DUMB TERMINAL.®

LEAR SIEGLER, INC.
DATA PRODUCTS DIVISION
714 North Brookhurst Street, Anaheim, CA 92803
(800) LEAR-DPD Dumb Terminal® is a registered trademark of Lear Siegler, Inc.

Info Systems Designers Seen Economic Saviors

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Information systems designers, as the architects of future corporate structure and survival, carry the responsibility for national economic prosperity, a Northern Telecom, Inc. executive said last week.

"Whether we like it or not, we are competing in an information race. The importance is such that the nation that leads or wins will be in a dominant economic position," Marcelo A. Gumucio, Northern Telecom executive vice-president for marketing, told the Associated Information Managers (AIM) last week.

Delivering the keynote address to AIM's annual meeting here, Gumucio said, "It is only those who have the foresight and creative initiative to apply information technology who will emerge victorious. This applies both to business and other enterprises and to nations . . . The prize is nothing less than economic stability and prosperity."

According to the Northern Telecom executive, "the application of information technology will produce a tough, competitive international business arena in which only the lean, fit and fast will survive and prosper. The opportunity for aggressive and innovative action by information managers is enormous," but "in the application of existing technology, we are in our infancy."

This application challenge is "of awesome dimension and awesome complexity," he said, citing three aspects of this complexity:

- Coping with technological change. "Obsolescence is . . . a constant threat to your investments in information systems," he observed.
- Coping with "the potentially bewildering array of suppliers and products. There is a chaotic situation, too, in the confusion of standards and protocols — many of them proprietary, designed to lock in the user to one supplier."
- Coping with change. "How," he asked, "can you plan for systems to accommodate needs that are not even foreseen now or a structure that is not even known yet?"

Gumucio suggested an approach to systems development that incorporates what he called "the five Cs": continuity, compatibility, congeniality, control and cost-effectiveness. He outlined for his audience basic characteristics of those five attributes of successful systems:

- ***Continuity.*** "A rational approach dictates that an information management system must be able to evolve to accommodate new technology as it is introduced. You must be assured that your system will be able to accept new software and hardware and to incorporate new features. It must be an evolving, growing system with backward and forward compatibility of new developments."
- ***Compatibility.*** "The system should be able to accommodate virtually any make or type of equipment, regardless of protocol or manufacturer."
- ***Congeniality.*** "Let's face it," he said, "if a system or component of it is not easy to use and attractive to the user, it simply won't get used."
- ***Control.*** "Control must be in the hands of the user, not a supplier. You must be able to dictate this design and control the operation of your system, not become captive to your prime supplier. And — another aspect of control — you must also have the controls necessary to operate your system at peak efficiency."
- ***Cost-effectiveness.*** "This is the bottom-line criterion," according to Gumucio. "If a system is not cost-effective, it will never be acceptable. And cost-effectiveness must include not only the cost implications of the system itself, but also the more effective performance and the greater productivity of your people as they use and communicate information more efficiently."

AIM Award Goes To Texaco Exec

WASHINGTON, D.C. — Raul E. DuBreuil, manager of information services for Texaco, Inc., last week received the 1983 Outstanding Information Manager Award. The prize is given annually by the Associated Information Managers (AIM).

DuBreuil, who has been with Texaco since 1967, was cited for "excellence in concept, development, design, implementation and management of Texaco's information center concept — an integrated, automated, corporatewide system including records management, library operation, word and data processing, micrographics and telecommunications."

AIM's 1983 Outstanding Information Product Award went to American Banker, Inc. and Bank Administration Institute for a joint venture called Innerline. The product was described as the banking industry's first computer-based information network.

Agristar from Agridata Resources, Inc. and Knowledge Index from Dialog Information Services, Inc. were runners-up for the product award.

The annual award for outstanding technology went to Cincom Systems, Inc. for its TIS data base system.

PRO-IV.™

INTRODUCING A GIANT STEP TOWARD NO PROGRAMMING.

To fully appreciate what PRO-IV is, let's begin with what it isn't. ☐ It isn't a program generator. It isn't a language processor. ☐ With PRO-IV there is no programming, no code generation, no compiling, no interpreting, no language barriers. ***BREAKS THE APPLICATIONS BOTTLENECK*** PRO-IV is the most advanced business applications processor on the market today. ☐ In one processing environment you can develop menus, screens, reports, system security, documentation and logic operations. ☐ With minimal training, anyone with a fundamental understanding of computers will experience significant productivity improvement in applications development. ☐ PRO-IV reduces the time needed to develop or modify an application by up to 80% when compared to conventional methods. ***STATE-OF-THE-ART CIES 680*** PRO-IV is available on our CIES 680 state-of-the-art 68000-based business computer, utilizing UNIX™ and industry standard Multibus™ architecture. ***A GIANT COMMITMENT*** The backing of a world-wide corporation assures quality in high volume OEM quantities and ensures our commitment to the future. ☐ For more information, just call or write CIE Systems, Inc., 2515 McCabe Way, Irvine, CA 92713-6579 (714) 660-1800. Call toll-free 1 800 854-5959. In California call 1 800 432-3687.



TM PRO-IV is a Trademark of Data Technical Analysts, Inc.
Multibus is a Trademark of Intel Corporation.
UNIX is a Trademark of Bell Laboratories.

© 1982 CIES

CIE SYSTEMS
A CITOH ELECTRONICS COMPANY

SEE US AT NCC BOOTH #5362

Despite Data Flow Restriction Woes

U.S. Firms Seen Lax in Data Privacy

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The majority of American firms contacted recently in a transborder data flow study have done little more than pay lip service to the need to protect personal data privacy, the study's director said last week.

This is extremely shortsighted for multinational corporations worried about possible data flow restrictions, according to Therese R. Revesz, managing editor of "Business International," a weekly newsletter. She said these firms should initiate aggressive campaigns to comply with national data protection laws.

Companies generally are aware that almost two-dozen nations have passed or are working on data protection laws and that a soon-to-be-ratified European treaty might restrict data transfers to the U.S., but few companies are taking the available steps to protect themselves in this new environment, Revesz said.

"Business International" interviewed almost 90 multinational corporations, headquartered in nine countries, in its study aimed at developing corporate responses to data flow restrictions. Revesz told the annual meeting of the Associated Information Managers on May 3 that European data protection authorities are correct in believing few U.S. firms are serious about personal data protection.

Of 51 U.S. firms contacted in the survey, she said, 34 have publicly endorsed a set of voluntary privacy protection guidelines developed by the Organization for Economic Cooperation and Development (OECD) and supported by the U.S. government. But, she said, "only 10 [of the 34] have taken any steps to implement them here or overseas."

Worse, only seven executives interviewed even knew their firms had endorsed the guidelines, and three actually strongly denied that their firms had done so, Revesz said.

Because the U.S. will not join the Council of Europe data protection treaty, expected to go into force later this year, the American government has placed great emphasis on the OECD guidelines, hoping a strong U.S. endorsement campaign will persuade European data protection authorities that American firms' privacy protection actions are as strong as those mandated in the Council of Europe treaty [CW, Feb. 28].

Revesz said the lukewarm guidelines implementation reinforces the skepticism of those authorities who already feel the guidelines are not sufficient because they are voluntary and in some cases little more than a public relations mechanism for many American firms.

She also reminded her audience that there are other threats to data flow in the works. She noted that many countries overseas are trying to restrict use of private leased lines and force companies to use more expensive public networks. Also, she pointed out that nations may try to restrict data flow outside the country to preserve local employment, bolster revenues and guard against any national vulnerability that might result from having to rely on foreign providers of data processing services and products.

Revesz said many companies may be violating national data protection laws without knowing it because

(Continued on Page 14)

Compliance Program Cited as Way To Protect International Operations

WASHINGTON, D.C. — Companies can best protect their international operations against data flow restrictions by enacting positive programs to comply with data protection laws and regulations, according to Therese R. Revesz, director of the data flow study recently undertaken by "Business International."

Using the Bank of America's compliance program as a model, Revesz suggested the following steps for a corporate compliance program:

- Publicize endorsement of the Organization for Economic Cooperation and Development privacy guidelines, especially in annual company reports — a step, she said, that European data protection authorities are seeking.
- Review company operations against data protection laws.
- Work with national data authorities in the countries where the firm operates to develop proper compliance mechanisms. For the time being, she reported, those authorities are being reasonable and helpful.
- Develop a corporate privacy code on an international basis.
- Disseminate within the organization a data protection compliance manual.
- Produce a brochure for the public outlining compliance actions.
- Consider signing contracts with overseas subsidiaries that bind the company to personal data protection equivalent to that expected in their countries.
- Designate compliance officers in each country.
- Most important, firms should let data protection authorities know about these compliance efforts. This will help in getting licenses to maintain vital corporate information practices.

FAVER/XP

• Faster and more flexible than LISTCAT, EXPORT/IMPORT, or REPRO.
• Simplifies DASD conversions for VSAM.
• Provides a backup verification facility.

FAVER/XP is an efficient flexible VSAM backup/restore utility for OS/VS and DOS/VSE systems.

What are the benefits of FAVER/XP? It's QUICAT providing catalog information in batch or interactive mode through TSO, ICCF, and FAQS/XP. It's also FAVER/XP's speed . . . up to 50% faster than LISTCAT, EXPORT/IMPORT, or REPRO! And, as you would expect from Goal Systems, all of FAVER/XP's facilities are easy to use.

Here's how FAVER/XP has helped one of its 1000+ customers:

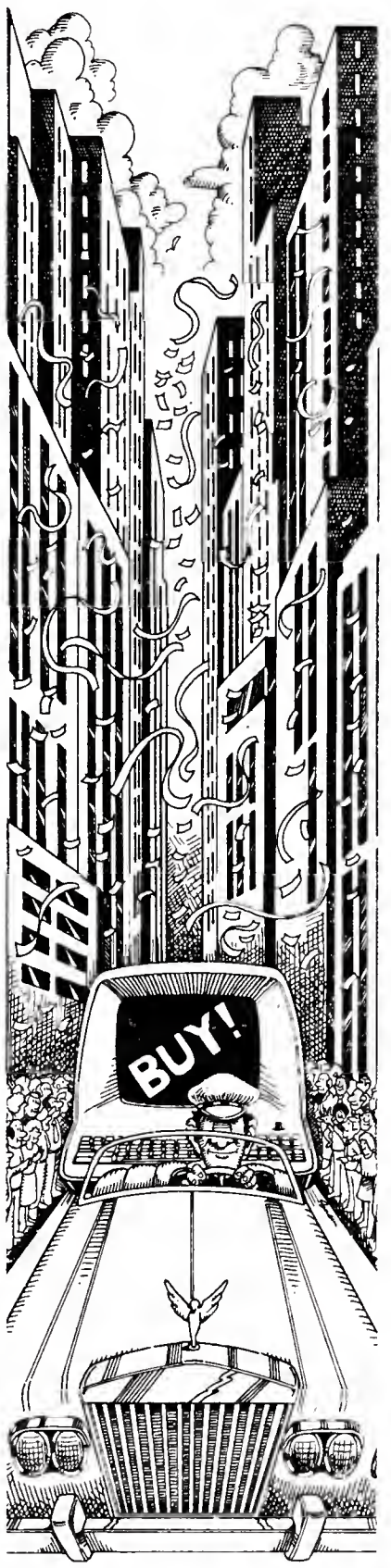
"Faver used only 25-30% as much CPU time as DL/1 Image Copies, with an estimated time savings of 40-45% in the same work environment."
—*Dick Boelter, Sr. Systems Programmer, Sentry Insurance.*

Call us today at 800-848-4640 (614-888-1775 in Ohio) for more information.

Goal Systems
Software Solutions

Goal Systems Building • 5455 N. High Street
Columbus, Ohio 43214-1193

DUMB NEWS FROM WALL STREET.



When you subscribe to THE SOURCE,sm a nationwide timesharing information service, you can use a modem and our Dumb Terminal® video display. Which makes the world's favorite independently-manufactured computer terminal the most reliable and cost-effective way to get information. From stock reports to football scores.

This Dumb information was supplied by Chris Chadwick. We're looking for other smart applications to use in our Dumb ads. Send us yours.

THERE ARE A MILLION SMART WAYS TO USE A DUMB TERMINAL.

LEAR SIEGLER, INC.
DATA PRODUCTS DIVISION
714 North Brookhurst Street
Anaheim, CA 92803
(800) LEAk-DPD

THE SOURCE sm is a service mark of Source Telecomputing Corp., a subsidiary of The Reader's Digest, Inc.

'Chances Are It's Not Evident'

Warning Issued on DP-End User Collusion

By Bob Johnson
CW New York Bureau

NEW YORK — If a senior computer operator earning $20,000 a year suddenly begins driving a Mercedes Benz and taking frequent trips to Las Vegas, should you suspect you are harboring a computer criminal?

Yes, according to Stanley D. Halper, director of data processing audit operations for Coopers & Lybrand here, who said a dramatic change in life-style may be a tip-off that a DP specialist is involved in some kind of computer abuse, either by himself or in collusion with an end user.

Interviewed at a recent seminar here on computer crime sponsored by Law & Business, Inc., Halper said that because the computer environment has moved from batch systems to more on-line processing, would-be end-user computer criminals now need the assistance of DP personnel.

"If there is in fact a collusive arrangement going on between a DP person and a user, the chances are that it is not evident," Halper pointed out. "In the theft of money, for example, there are many administrative checks that are usually in place. Essentially, the biggest clues the DPer has are changes in the habits and attitudes of key computer employees. When a DP manager notices some radical differences, although they may not always mean something wrong is taking place, he should nevertheless keep his eyes open."

Because processing has become increasingly complex, it very often takes a DP-generated "computer action" to get access to sensitive program libraries. Users with larceny on their minds must go through the data center to get past safety measures such as software security controls, passwords and printout checks, Halper noted.

"We are at a point where [end users] realize that it takes the collusive effort of a DPer to initiate a crime. Say that a user sees a system's weaknesses from a remote site, and he wants to put something up on a data base or library for his own use. He can't do it without the assistance of a programmer or someone who has direct access to the system and can get by its security."

The auditor urged DP managers who suspect an employee of computer abuse to take the most cautious action possible so as not to create an embarassing or legally complicated situation. He advised DP executives to sit down with the auditing staff, the security staff and computer operations people to discuss the suspect's actions or the suspected crime.

Halper offered the following scenario to illustrate how a DP manager should proceed with the investigation of a suspected employee. "The DP manager sees something fishy going on with the payroll processing in his shop. First, he should check his own security controls, like [system management facility] reports. Very often, the DP department will take it for granted that all of its controls are in place, when in fact they are not being exercised.

"The next thing for the DPer to do is to be familiar with what the payroll department is getting from DP in terms of a checklist or report. This may include things other than the normal 'exceptions' lists. He should then ask payroll if they were in fact checking these lists.

"Finally, sit down with the internal audit people and see if they are satisfied with internal audit controls; in the case of a payroll system, [determine] if the bank reconciliations were OK," Halper said.

If everything checks out, the DP manager may then want to approach the suspect and ask him to meet with the company's human resource division. But "this is where it really gets tricky," Halper said. "You have to sit down with the guy and try to get a feeling of what's going on. It just may be a legitimate thing that he is doing, or the change in his life-style may be the result of an inheritance."

McGill to Keynote WIP Meet

NEW YORK — Archie McGill, president of American Bell, Inc., will deliver the keynote address at a conference at the Summit Hotel here May 17 sponsored by Women in Information Processing.

At "A Perspective: American Bell," McGill will discuss the underlying technology, changing markets and business pressures that shape the information processing and communications environments. McGill will also address the question of how Advanced Information Systems will fit into this changing environment following the reorganization of AT&T.

The conference registration fee is $15 for members and $30 for nonmembers.

Additional information on the conference is available from Susan Thomas, Women in Information Processing, Box 39173, Washington, D.C. 20016.

U.S. Firms Called Lax

(Continued from Page 13)

their employees are ignorant of the laws' provisions. This opens the firms up to selective enforcement in that the laws could be used to punish firms for other, unrelated activities, she said.

The problem will only get worse, she added, now that corporate departments are using personal computers whose operations, which are often outside the control of company headquarters, could be in technical violation of data protection laws if the data carries personal identifiers.

DECsystem-10/20 Users...



Mainframe Modeling at a Micro Price

- BBL II+ is a true decision support language, not a spreadsheet package
- Self-documenting models that look and read like English
- Easy to learn and use, yet incredibly powerful
- Delivered with state-of-the-art documentation—installs in minutes
- BBL II+ "Starter Kits" cost just $95, including complete BBL II+ documentation, the BBL II+ application library and a 90-day trial copy of the BBL II+ system

If you own or use any standard DECsystem-10 or DECSYSTEM-20, you can finally get the mainframe modeling system you need, at a price you can afford... just $2950! Prove it for yourself with a BBL II+ "Starter Kit". Call or write today for complete details.

BBL II+ Available Now... Just $2950.00

DECsystem-10 & DECSYSTEM-20 are trademarks of Digital Equipment Corporation

BBL II+ Core & Code, Inc.
3 Winding River Circle, Wellesley, MA 02181
(617) 237-4554

Meet Isaac
The Computer-wise Chimp!



Commodore Computer Safari! May 20th and 21st

See the greatest array of Commodore products and compatible hardware, software and accessories ever assembled! Plus enjoy the excitement of the 300 acre Lion Country Safari with over 600 wild animals including our star Issac. All for one low price.

Lion Country Safari
405 Freeway and Irvine Center Dr. Laguna Hills, CA.
Friday and Saturday 10 am to 6 pm
Adults: $9.00 Children $6.00
For more information call (714) 546-4888

commodore COMPUTER

New York · Boston · Philadelphia

ONE-DAY INTENSIVE Instructor-led SEMINARS

- RDOS/AOS (DATA GENERAL)
- Computer Security
- Tandem Data Communications
- Train the Trainer
- Independent Consulting – "Going on Your Own"

April 29, May 6/13/20, June 3/10/17/24

Additional dates throughout the country will be scheduled to meet your needs. Individual attendee cost is $145. ATP will also present these one-day sessions in-house, designing them to fulfill your specific requirements. Call or write for fee schedule and available dates.

ATP
ADVANCED TRAINING PROFESSIONALS LTD, INC.

Corporate Office:
111 East Ave., Norwalk, CT 06851, (203) 866-6060, (203) 866-3520
Branch Offices:
29 Portnellen Ave., New Rochelle, NY 10804, (914) 235-6938
82 Carpenters Ridge, Cincinnati, OH 45241, (513) 791-1616

Programmer/Analyst Loots Rehab Fund For $17,000 He Was Entrusted to Protect

By Jeffry Beeler
CW West Coast Bureau

OLYMPIA, Wash. — A programmer/analyst working for the state of Washington has pleaded guilty to stealing almost $17,000 from a government system whose security he was entrusted with protecting.

More than $15,000 of the loot that Stanley Slyngstad swiped during 10 months of illicit systems tampering apparently went to pay for drinks at a local watering hole known as Charlie's Tavern. Slyngstad, 44, seems to have been a regular at Charlie's, where he often bought drinks not only for himself, but for many of his companions as well, according to State Patrol Lt. Fred Pilon.

The remaining $1,800 of the stolen state money eventually found its way into the hands of three of Slyngstad's acquaintances, all of whom were apparently in dire need of financial aid, Pilon said.

Although Slyngstad's efforts to give to the poor by stealing from the government have earned him a reputation as a latter-day Robin Hood, state authorities have rejected the comparison as inappropriate. "Slyngstad is definitely no Robin Hood," maintained Les James, director of the state Division of Vocational Rehabilitation (DVR).

"The money that he stole to buy drinks at a local bar came from a fund that was designed to train the handicapped for new careers and put them back to work. Taking money from disabled people and spending it on alcohol is not my idea of Robin Hood."

Before he was arrested and lost his job on March 11, Slyngstad worked for the DVR, where he designed some of the security software aimed at protecting the agency's funds from theft, James said.

Part of the programmer/analyst's job was to develop safeguards to prevent vocational counselors and data entry operators out in the field from gaining unauthorized access to the state's systems.

An Unauthorized Program

Early last year, Slyngstad apparently wrote an unauthorized program that allowed him to issue state checks for fictitious claims. The program, whose existence has long been suspected but has yet to be confirmed, was also apparently designed to erase automatically all evidence of Slyngstad's illegal transactions from the system's files, according to James.

Between April 1982 and last February, the programmer/analyst used his special program to generate 25 phony state checks worth a total of $16,923, Pilon maintained. Twenty-two of the checks were made payable to Slyngstad himself and were mailed to his home address here.

Of the three remaining checks, one went to one of Slyngstad's drinking buddies, who used the windfall to make the down payment on a pickup truck he desperately needed for his job, James said.

Blame for the thefts from the state's Sperry Corp. 1100/83-based system can be traced at least partly to the DVR's failure to monitor Slyngstad's activities with sufficient care, Pilon said. Although Slyngstad occupied a highly sensitive position with free access to literally millions of dollars in state funds, no one in the DVR was systematically supervising his actions to make sure he did his job honestly, Pilon said. The result was that the programmer/analyst was apparently able to go to his office during weekends, when his co-workers were off duty, and use the state system for unauthorized purposes.

Needed a Watchdog

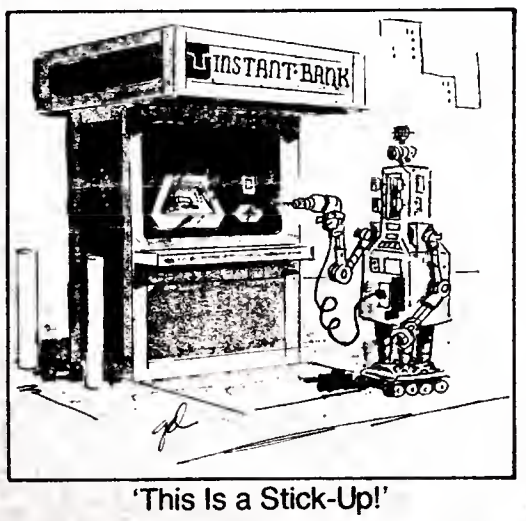
Pilon's observations about the reported holes in the state's systems security were echoed by James. "Stan himself said afterwards that what we needed was to have someone looking over his shoulder," James said. "So to that extent, we [in the DVR] are probably culpable [for the thefts from the state system]."

On the other hand, he added, the DVR's failure to appoint a watchdog for Slyngstad is at least partly understandable. "Obviously, you wouldn't assume that the writer of your security program was going to steal from you," James said. "But the sad fact of the matter is that if a person is able to program, he's also able to steal from you, and there's not an awful lot you can do to stop him."

During the roughly two months since Slyngstad's arrest and dismissal, DVR officials have "changed the location of certain things in our office to make certain.... Slyngstad couldn't return and find his way around easily," James said.

The discovery of Slyngstad's financial misdeeds occurred by accident. An accountant was routinely examining one of the DVR's "remittance advices," which provide a record of all the agency's check authorizations, when he noticed that the address on the document was identical to Slyngstad's.

Suspicious, the officials checked their systems files for evidence of wrongdoing, but at first found nothing amiss. Not until they exhaustively examined huge numbers of remittance advices were they finally able to find any phony checks, most of which had been written to Stan Slyngstad, James said.



'This Is a Stick-Up!'



THE DUMBEST STAR IN HOLLYWOOD.



Our Dumb Terminal® video display constantly shows up in movies and TV shows. For the simple reason that it's virtually impossible to shoot a scene involving a computer without including the world's favorite independently-manufactured computer terminal.

This close encounter of the Dumb kind was submitted by Gerry Wade of Property Master. We're looking for other smart applications to use in our Dumb ads. Send us yours.

THERE ARE A MILLION SMART WAYS TO USE A DUMB TERMINAL.

LEAR SIEGLER, INC.
DATA PRODUCTS DIVISION
714 North Brookhurst Street
Anaheim, CA 92803
(800) LEAR-DPD

Users Group Criticizes FCC Plan for Detariffing

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — The Federal Communications Commission's (FCC) plan for detariffing telephone company-provided terminal equipment now installed on customer premises was sharply criticized last week by a spokesman for the International Communications Association (ICA), a users group composed of the nation's largest corporations. The criticism came shortly after two FCC commissioners said they are unhappy with the tentatively approved scheme.

The commission late last month asked for public comment on the detariffing plan — suggested almost entirely by AT&T — whose major provisions include:

- All embedded (already installed) terminals would be detariffed next Jan. 1.
- When detariffed, these terminals — often referred to as customer premises equipment — would be offered for sale, but only if American Bell, Inc., AT&T's terminal marketing subsidiary, offers the same type of equipment new.
- The above restriction would end in 1986, at which time "virtually all" Bell-manufactured customer premises equipment (CPE) would be offered for sale.
- For 18 months after Jan. 1, 1984, rental rates for embedded Bell customer premises equipment would be frozen. National rates for private branch exchange (PBX), key and single-line customer premises equipment could not exceed the highest rate currently allowed under tariff. The specific prices would be announced within three months after the FCC approved a detariffing plan.

Plan Contested

ICA attorney Brian Moir contended that the plan "fails to give users adequate price protection. Prices are controlled for only 18 months, after which [American Bell] can charge whatever the market will bear. In some cases, a user will be able to escape steeply higher rentals by buying his equipment, but not in others, since the plan provides that all embedded equipment will not be offered for sale until 1986. Note that the price freeze would end in June '85."

Moir said it is "unclear" why PBX and telephone terminal prices are being limited to the highest rather than the average present tariff rate. He also said that the FCC would be in a much better bargaining position if it required the phone company to announce its initial prices for embedded customer premises equipment before rather than after the commission adopts a final plan.

At the commission's April 27 meeting where the AT&T-suggested plan was "tentatively" favored, according to an FCC press release, Commissioner Henry Rivera questioned the idea of allowing American Bell to buy the Bell operating companies' installed terminal base at adjusted net book value, which a number of critics contend is less than its true market value. Commissioner Mimi Weyforth Dawson thought the embedded base should remain tariffed until it is fully depreciated because, according to an aide, the proposed detariffing plan will, rather than promote competition, enable American Bell to inherit the Bell operating companies' dominant position in the terminal market.

Rivera's and Dawson's objections could be significant. By the end of next month, the present seven-member FCC will be reduced to four commissioners, among them Dawson and Rivera.

Datacomm Briefs

FCC Asked to Decide On Interstate Cable

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — Cox Cable Communications, Inc. has asked the Federal Communications Commission (FCC) to assert federal jurisdiction over cable television facilities that carry interstate communications traffic. The move came shortly after the Nebraska Public Service Commission decided that a Cox-owned cable TV system in Omaha, Neb., now being used by MCI Telecommunications Corp. to bypass the local telephone network, is subject to state regulation.

Cox is seeking a federal court order that would prevent the Nebraska commission from carrying out that decision.

Meanwhile, legislation requiring partial federal regulation of cable TV channels was awaiting action on the floor of the U.S. Senate last week. The bill would regulate channels used for basic telephone service but not other services.

Telephone carriers, led by AT&T, are opposing this arrangement because they fear it would encourage private-line users to bypass local telephone company facilities. If cable TV operators offer unregulated, private-line service, they allegedly would be able to charge significantly less than local telephone companies.

AT&T to Launch Telstar 3 Satellite

WASHINGTON, D.C. — AT&T will launch a communications satellite July 28, assuming the Federal Communications Commission does not object, and wideband data transmission will be one application.

The satellite, dubbed Telstar 3, will have a life of 10 years, three more than those now in use, a telephone company spokeswoman said. Transmissions will flow through each of Telstar 3's 24 transponders at 60M bit/sec.

However, "it's hard to say" whether Telstar 3 will produce lower costs, the spokeswoman said.

The July 28 launch will add a fourth satellite to the three AT&T currently leases from Comsat General Corp. Beginning next year, the phone company plans to replace the leased facilities by launching additional Telstars.

FCC Gives OK to 10 To Launch Satellites

WASHINGTON, D.C. — The Federal Communications Commission (FCC) has authorized 10 companies to launch 19 communications satellites during the next four years.

Three firms — AT&T (see story above), RCA American Communications Co. and Western Union Telegraph Co. — plan launches this year.

Among the others are American Satellite Corp., Hughes Communications, Inc., Satellite Business Systems and Southern Pacific Satellite Co.

Southern Bell LADTS Gets Florida Nod

WASHINGTON, D.C. — IBM and GTE Telenet, Inc. were reportedly reviewing their options last week after the Florida Public Service Commission said Southern Bell Telephone Co. could make Local Area Data Transport Service (LADTS) available for a much-heralded videotex service in the Miami area next fall.

LADTS, developed by AT&T, is a scheme for transmitting voice and digital data simultaneously over existing analog local loops. A major component of the embryonic integrated services digital network (ISDN) that AT&T has begun deploying throughout the country, it will support home- and business-oriented information services.

Southern Bell was the first telephone operating company to file an LADTS tariff. In granting the tariff, the Florida Public Service Commission overruled its own staff as well as IBM and GTE, all of whom said implementation of the tariff should be deferred and investigated.

IBM and GTE contended that under the Federal Communications Commision's (FCC) Second Computer Inquiry Decision, the Southern Bell tariff may be illegal because it includes protocol conversion. The question of whether this makes the service "enhanced" and thus not allowed to be offered by a Bell operating company is now being debated at the FCC.

The Florida commission's order lets Southern Bell provide LADTS only to Viewdata Corp. of America, the company that plans to launch videotex service in Miami next fall. Before serving additional customers, the phone company will have to provide "appropriate" cost data, the commission added.

AT&T Announces Satellite Service

WASHINGTON, D.C. — Satellite Digital Circuits (SDC), a "more versatile and widely available" high-capacity satellite transmission service, was unveiled by AT&T late last month. If authorized by the Federal Communications Commission, it will begin operation June 11.

The service consists of 1.5M bit/sec dedicated channels through which users could transmit a mix of voice, video and data on a point-to-multipoint basis. Likely applications, according to the telephone company, include video teleconferencing and computer-to-computer bulk data transfer.

Each channel is priced at $9,000/mo. The first transmit/receive earth station, if shared, would cost $3,500/mo plus $2,000 for installation. Transmit or receive facilities are less, as are additional earth stations.

Dedicated earth stations, offering one to eight channels, would be available at $12,600 to $14,750/mo plus $9,000 for installation.

SDC is the latest in a family of high-capacity transmission services to be offered by AT&T. The others are a land-based private line offering called Terrestrial Digital Circuits and a switched version — High-Speed Switched Digital Service — which can be either terrestrial or satellite circuit-based.

A Shirt-Pocket Alternative to the Desktop Terminal.

Need a quick, easy way to talk to a computer? Here's a hand-held, fully portable computer terminal that gives instant access to any ASCII transmitting data system with an RS232 interface. It's the revolutionary G.R. Electronics Pocket Terminal.



The silent, solid-state terminal has a 40-key, positive click-response keyboard. From its 32-character internal memory it displays eight bright 16-segment LED characters through a one-line window.

You may select from two alternate display modes. Entries may be in any format required, and all memory data can be edited as desired. Miniature switches allow selection of these options:

- Single or dual stop bits
- Parity bit SET/RESET/EVEN/ODD
- 300/110 baud transmission rates
- Control code response ENABLE/DISABLE.

FEATURES:
- Two Selectable Transmission Rates
- Format-Controllable Input & Output
- Compact, Lightweight, Fully Portable
- Full 128-Char. ASCII Transmit/Receive
- 40 Multi-Function Keys • 32-Character Memory
- Large Eight-Char. LED Display Readable from 6 ft. Distance

GR Electronics
1640 Fifth Street, Santa Monica, CA 90401
Phone: (213) 395-4774
Telex: 652337 (BT Smedley SNM)

Scholars Warn Survival of USPS Depends On Freedom to Compete in New Services

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — "If the U.S. Postal Service [USPS] is to survive . . . it must be given the freedom to compete in telecommunications services."

Joel L. Fleishman, vice-chancellor of Duke University, made that statement after he and several other scholars spent two years studying Postal Service operations.

Their 300-page analysis of the situation, entitled "The Future of the Postal Service," was released here late last month by the Aspen Institute, a public policy think tank that cosponsored the project along with USPS and Harvard and Duke universities.

'Impact May Be Large'

"While experts may argue infinitely about the extent to which electronic communications technology will divert revenues from the first-class mail stream, no one can deny that . . . its impact may be quite large," wrote Fleishman, the book's editor. "Given the extent to which potentially diverting technology is already being widely used, it requires little imagination . . . to anticipate substantial consequences for the postal service."

As examples of "potentially diverting technology," Fleishman cited "electronic message systems within large corporations, telephone- and television-compatible terminals, both in business and in homes, and bank cards that make charges directly against checking accounts."

If competing electronic message systems capture 5% to 25% of current first-class mail, which Fleishman believes will occur, "first-class mail rates could easily double even if other factors are ignored," he said.

Among these "other factors" is the financial condition of the postal service. "In 1970, USPS had a $2 billion equity; by 1980, despite a $1 billion contribution voted by Congress, this positive balance had become a $3.6 billion deficit," Fleishman noted. The change was largely due to rising labor costs, he contended, pointing out that "compared to other government employees of comparable duties and level, postal workers have fared approximately twice as well."

To maintain "present uneconomic levels of service without continuously increasing postal debt will inevitably require more revenues," he said, adding that allowing the Postal Service to offer additional on-line message services "could reduce this problem significantly."

However, before unleashing the Postal Service, the Private Express Statutes, which make USPS the exclusive distributor of first-class mail, must be repealed, according to Fleishman. Otherwise, he contended, the Postal Service could raise its letter mail rates above costs and use the excess to underprice its competitive electronic mail offerings.

Fleishman also called for abolition of the U.S. Postal Rate Commission, the agency that reviews all postal rate and service changes. Since commission proceedings take several months, Fleishman said, USPS competitors could use it to hobble the Postal Service's electronic mail offerings.

National Data Systems Forum Releases Conference Proceedings

WASHINGTON, D.C. — The proceedings of the 14th National Data Systems Forum, sponsored by the Transportation Data Coordinating Committee (TDCC) and featuring "The World of Electronic Data Interchange," have been released. This publication includes presentations at the TDCC Forum by spokesmen in the business systems modernization and automation community.

TDCC Forum proceedings reportedly serve as a library and reference source for the latest developments in the area of intercompany computer-to-computer interchange of administrative and operational transaction data formerly accomplished by paper documents.

Panel presentations from 16 technical clinics are outlined in the proceedings. Speakers whose presentations are featured include Lewis H. Young, editor in chief, *Business Week*; Charles Marshall, AT&T executive vice-president; Harry B. DeMaio, corporate director of data security for IBM; and John L. Kirkley, editor, *Datamation*.

Forum attendees will receive a complimentary copy. It is available to others for $20 from TDCC headquarters, 1101 17th St. N.W., Washington, D.C. 20036.

Survey Addresses Office Automation

BAD HOMBURG, West Germany — H.F. Sherwood & Associates has announced Survey Report IV of its Information Technology Service, which focuses on office automation.

The study concludes that office automation functions should be considered in conjunction with the data processing and communications functions of the company, the vendor said.

The study, a follow-up survey of a 1976 poll of 17 U.S. companies, includes case studies and lists each firm's biggest office automation problems, major lessons learned and what they would do differently.

The report costs $100. H.F. Sherwood & Associates can be reached through P.O. Box 2316, Bad Homburg, West Germany.



IT'S HARD TO BEAT A DUMB VIDEO GAME.



That's what a leading video game manufacturer thinks. Which is why they use our Dumb Terminal® video display to program their colorful, exciting products. Their customers may not play on the world's favorite independently-manufactured terminal, but they too find Dumb games hard to beat.

This Dumb application was submitted by Chuck Lejsek. If you think you can beat it, send us yours. If it's smart enough, we'll use it in one of our Dumb ads.

THERE ARE A MILLION SMART WAYS TO USE A DUMB TERMINAL.

LEAR SIEGLER, INC.
DATA PRODUCTS DIVISION
714 North Brookhurst Street
Anaheim, CA 92803
(800) LEAR-DPD

Despite Its Larger Share of DP Budget

Study Finds Data Entry Salaries Up 6.5% in '82

By Ed Scannell
CW Staff

STAMFORD, Conn. — While salaries for data entry operators rose only 6.5% in the past year compared with 1981's 12% increase, data entry is accounting for a larger share of the total data processing budget.

This was one of the findings of a recently completed survey released by the Data Entry Management Association (Dema).

The firm's fourth annual survey was based on responses from 153 data entry companies in the U.S. and Canada, 59% of which had annual revenues in excess of $50 million.

The survey attributed the low salary increases to the protracted recession. The still sluggish economy is expected to keep the cap on data entry salaries over the course of 1983, and the survey predicted a 6.68% increase for the upcoming year.

Overall Picture

At the same time, the data entry portion of the overall data processing operating budget grew, on an average, from 19.11% in 1981 to 26.79% in 1982.

A Dema spokesman was not sure to which factors he could attribute the 7.88% increase in most data entry budgets.

However, the spokesman theorized that it might be an indication that data entry firms "now running lean and mean" are anticipating a solid economic recovery over the next year.

Although the recession has had a largely negative impact on the data entry business over the past year, in some regards it has also proved beneficial.

Because of the recession, operators tend to stay at one job longer and work harder to keep that job, the Dema spokesman said.

This tendency is reflected in the turnover rate among U.S. and Canadian data entry firms, which was more than cut in half compared with the previous year's totals, going from 13.8% to 6.84%. The rate of absenteeism also dropped from 6.94% to 5.56%, he said.

The improved turnover rate and lower rate of absenteeism are perhaps two of the reasons why the average number of keystrokes per operator per hour has increased for the fourth straight year, a Dema spokesman said.

Keystrokes per hour per operator rose 3% in 1982, going from 11,106 to 11,435.

In addition, the number of data entry facilities breaking the 15,000 keystrokes per hour doubled from 3% to 6%, according to the survey.

For the first time in the survey's four-year history, data entry managers were asked if they thought their operators were very happy, somewhat happy, indifferent or unhappy with their positions.

'Somewhat Happy'

The figures showed that 27.4% said their operators were very happy; 61% of the managers thought their operators were somewhat happy; 9.6% said their operators were indifferent; and 1.3%, or just two of the managers surveyed, thought their operators were unhappy.

Other statistics from the survey showed that the average effectiveness cost of data entry operators is $18.11 per hour.

This figure represents the costs to the facility of using a typical operator for one hour and does not include the cost of rent, electricity and other overhead, the survey said.

There was an increase in incentive systems for operators last year, but a decrease in the use of flex-time schedules as well as a drop in the number of shops offering four-day and three-day work weeks.

Dema can be reached through P.O. Box 3231, Stamford, Conn. 06905.

"Hyatt was a pioneer of local area networks. When Datapoint introduced the first one, we ordered."

—Bob Regan
V.P. Management Information Systems
Hyatt Hotels Corporation



"Local area networks are the hot topic in data processing these days. But they're nothing new to us," says Hyatt's Bob Regan. "Ours have been up and running for five years."

When Datapoint introduced the first local area network, the ARC® system, in 1977, Hyatt was among the first to install it. Today there are approximately 5,000 ARC local area networks in use, far more than any competing system.

"One reason the ARC network has been so effective for Hyatt is because it's easy to expand," says Regan. "Hyatt has had phenomenal growth, and the ARC has kept up. When more people needed the system to do more work, we simply added to the network."

The ARC local area network can be expanded virtually without limit by simply plugging in additional Datapoint processors, printers, storage disks, and terminals. Each new processor adds power to the network so new users get the same fast response the original users were getting. Companies can closely match the power of an ARC system to their needs, expanding in small, inexpensive increments instead of buying "more computer than they need" in order to have room for growth.

What's more, Datapoint systems can be expanded or upgraded without replacing software. "We run some programs on ARC networks that were originally written for our first Datapoint computer more than ten years ago," says Regan. "That means we didn't lose any of the money we invested in programming and training. And it made the growth steps easy on our people. The changeover to the ARC network was accomplished in only two days."

No matter how far an ARC system is expanded, all the users can have access to all the data except where security precautions are installed. So even though more and more people are using more and more computers, there's never a need to duplicate files.

"At present, Hyatt operates forty-five ARC systems," Regan says. "Others are in the planning stages right now. On the operations side we use them for accounting, reservations, and group sales. At Corporate we use them for accounting and for systems development. Obviously, we depend on them heavily. They're like the meters where we check our own financial performance. They simply have to work. And they do.

"Hyatt has stayed with the ARC system because it's been cost-effective. That's the bottom line. I can recommend a certain system to a hotel, but in the end, the system has to sell itself. And keep selling itself after it's installed. Our Datapoint ARC systems have done that."

For more about Datapoint, call (800) 531-5639. In Texas, call (800) 292-5099. Telex 767300 in the U.S.; 06986622 in Canada; or 923494 in Europe (UK). Or write Datapoint Corporation, Marketing Communications T41CW, 9725 Datapoint Drive, San Antonio, Texas 78284.



DATAPOINT

Pressure on Storage Researchers Mounting

By Tom Henkel
CW Staff

The proliferation of microcomputers and demands from large computer users for higher capacity tape and disk drives has spawned a sort of memory mania among recording technology researchers.

Increased user demand for all forms of data storage is putting pressure on manufacturers to develop faster, smaller and cheaper storage devices.

According to a Cleveland-based market research firm, Predicasts, Inc., domestic sales of memory products will top $5 billion by 1985 and $28 billion by 1995. Predicasts further noted that within two years, the market for memory products will have undergone a compete reversal from being driven by large-scale, high-performance disk drives for mainframes to producing floppy and microfloppy diskettes for microcomputers.

The booming demand for memory products is putting pressure on memory researchers for technological breakthroughs. Researchers agree that improvements in existing longitudinal magnetic storage technologies are necessary to keep users happy until newer technologies, like vertical magnetic recording and optical recording, become inexpensive and efficient enough to make strong inroads on the currently magnetic-dominated world.

Only Half the Battle

But according to at least one researcher, Dr. Mark Kryder with Carnegie-Mellon University's Magnetics Research Center in Pittsburgh, Pa., coming up with better techniques for storing information is only half the battle. Kryder noted that even with new recording technologies, tape drives and disk drives are still electromechanical devices. That means parts will wear out. In addition, the possibility of mechanical failure increases as parts become smaller and are subjected to increased stress.

"The mechanical part is just as big as the magnetic part," Kryder said, noting that some magnetic media will wear out within minutes if the mechanical parts of a machine are not designed properly." But Kryder is confident that engineers will be able to design faster and more accurate mechanical components to support improved storage techniques.

While different recording techniques such as optical and vertical technologies may hold promise for the future, he felt strong advances are possible in longitudinal techniques in the near future. Recording densities of 16M bit/sq in. are "very doable" in the 1984-85 time frame, he said. Longitudinal techniques can be developed to handle bit densities of 50M bit/sq in. or higher.

"It's nice to have new techniques," Kryder said, "but there won't be a sudden switch." The thin film head technology popularized by IBM will probably be the staple technology of large-capacity disk drives for at least the near future, he said.

Perpendicular recording shows potential for larger recording densities, but there are still problems with the technology, such as a requirement that the read/write head must fly closer to the recording media, which causes the media to wear out faster, according to Kryder.

Optical recording, which received much attention from technical gurus as a possible alternative to magnetic storage, will take some time to make its mark on data processing. According to W. John Tomlinson, supervisor of the Optical Disk Recording Group at Bell Laboratories, the first uses of optical recording will be as replacements to reel-to-reel tape drives.

The current drawback to optical recording is that it cannot be easily erased. While some researchers are working to perfect an erasable technique, Tomlinson predicted that it will take several years to develop an erasable optical device. Even with the erasability question answered, Tomlinson said that optical access times must be improved to compete with magnetic technologies. There is a potential bottleneck in an optical storage system if a lot of users attempt to access small amounts of information at the same time.

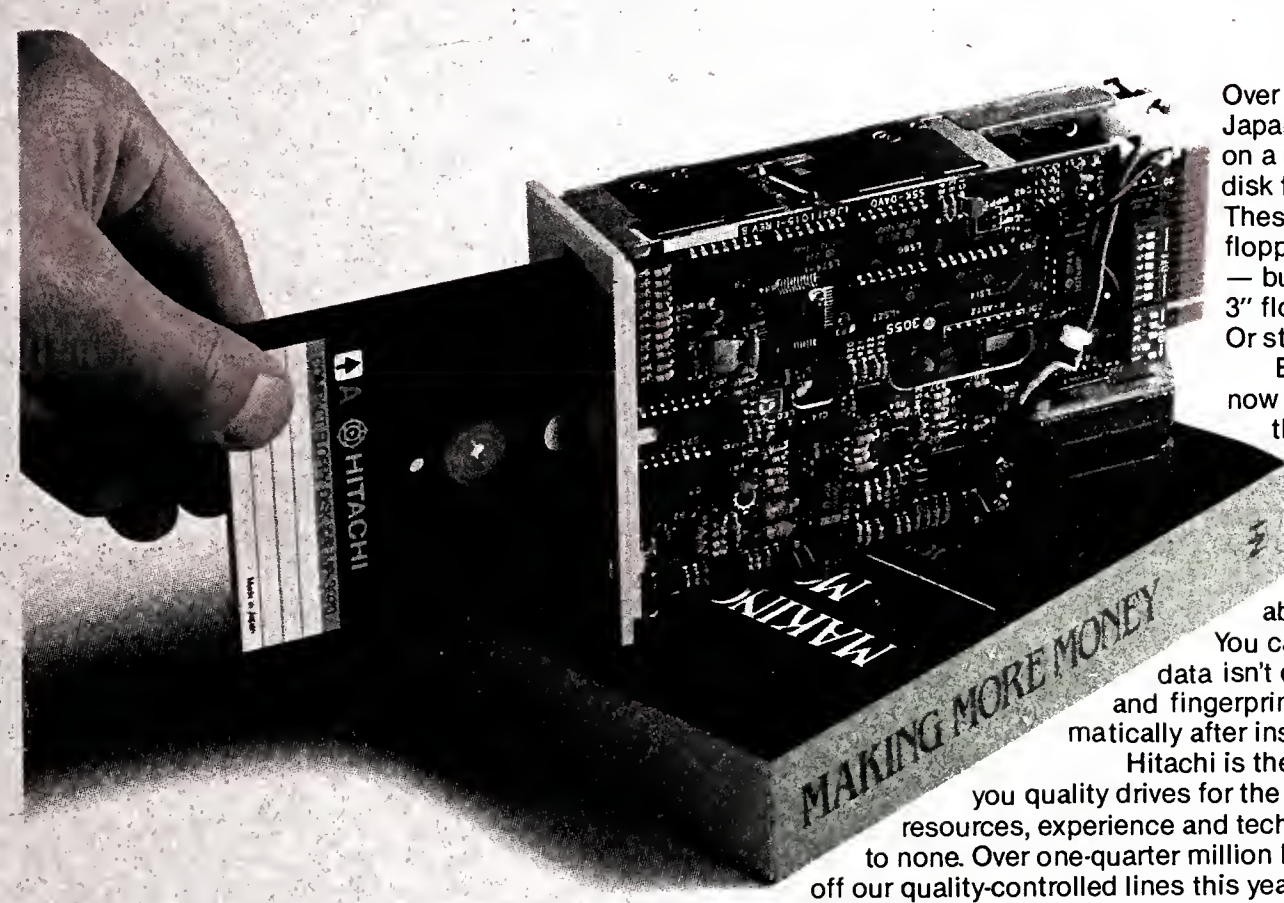
Don Simon, a principal researcher with PA International Management Consultants, Inc., noted that declining costs for magnetic media storage devices may stunt the growth of optical devices.

Burroughs Corp. recently scrapped an active development project to build an optical disk product. A spokesman said the firm felt it would not be cost-effective to market an optical disk at this time. Burroughs still plans to research optical technologies, however.

Where optical shines, Simon said, is in applications that today use microfiche — namely low-cost replication of material which is used for a while and then discarded.

But in terms of competing with magnetic data storage, Simon felt optical recording might have as little impact on magnetic data storage devices as bubble memories. Several years ago, bubble memories were touted as a possible alternative to magnetic storage. However, both Kryder and Simon noted that declining costs in magnetic media dimmed early hopes for bubble memories.

Hitachi takes a big stride toward the smaller footprint.



Over 22 leading American and Japanese makers have agreed on a unified 3" compact floppy disk format for powerful reasons. These 3" floppies have 5 1/4" floppy capacity — 500 kilobytes — but are far more compact. A 3" floppy fits in the shirt pocket. Or standard mailing envelope.

Equally important, the drive now has a smaller footprint than ever before. It's quite light. And portable.

And new 3" compact floppy disks surpass any other format when it comes to protecting valuable data. The case is hard. You cannot bend the 3" floppy so data isn't destroyed. The dust-sealing and fingerprint-proof shutter opens automatically after insertion in the drive.

Hitachi is the first manufacturer to offer you quality drives for the 3" revolution. Hitachi has resources, experience and technological expertise second to none. Over one-quarter million Hitachi drives will be rolling off our quality-controlled lines this year. Wouldn't it be wise to have Hitachi dependability behind your products?

Specifications: Storage capacity unformatted: 500 K bytes. Total no. of tracks: 80. Recording density: 8,946 bpi. Track density: 100 tpi. Transfer rate: 250 K bits/sec. Track-to-track positioning time: 3 ms/track. Dimensions (W × D × H) mm: 90 × 40 × 150. Wt.: 0.68kg.
HFD305D: double sided drive. **HFD305S:** single side drive with same specs if a double sided floppy is inserted again for the second side.

Floppy disk marked can be used with this floppy disk drive.

3" Compact Floppy Disk Drive HFD305

HITACHI

For further information:
Mr. Takao Ichiki, Mid-Western Regional Office, Hitachi Sales Corporation of America, 1400 Morse Ave., Elk Grove Village, ILL. 60007 Phone: (312) 593-1550 Fax: (312) 593-2436
Mr. T. Kodera, New Jersey Office, Hitachi America, Ltd. 59 Route 17, Allendale, N.J. 07401 Phone: (201) 825-8000 Fax: (201) 825-4781

Shift From Doing to Managing Seen Critical

By Marguerite Zientara
CW Staff

BOSTON — The key issue in effective leadership is making the move from doing to managing, with the balance shifting in direct proportion to how high up the management ranks one goes.

So said Edward Kappus, president of Management Strategies International Corp. in Trumbull, Conn., when he addressed the question of "Are You an Effective Leader?" at the Association for Systems Management's annual conference here recently.

While "doing" deals with tactics and efficiency, or "doing things right," Kappus explained, "managing" deals with strategy and effectiveness, or "doing the right things."

Thus, a manager should give up doing certain things as he rises in the corporate hierarchy "to make way for higher leverage things to get involved in," according to Kappus.

One way to judge whether you are doing this, he said, is to ask yourself, "If we weren't doing this today, would we begin doing it?"

Instilling Motivation

One of the tasks commonly regarded as central to leadership is instilling motivation in subordinates. But "you can't motivate anyone," Kappus contended. "All you can be is an environmental engineer to create an atmosphere where individuals motivate themselves," he explained.

If it is true that managers cannot motivate anyone and that people do things for their own reasons, not management's, then the manager must identify his employees' reasons.

"The single thing more than anything else that a person needs in order to be motivated is a sense of achievement," Kappus said. Toward that end, "honest, timely and appropriate recognition" must be given, lest the manager blunt the sense of achievement and thereby lose its motivational effect.

"Don't wait for the great month-end or year-end achievements," he advised. "You must recognize the day-to-day achievements, and that increases the odds that they'll recur."

Coaching is another way to inspire motivation. "You need a skill development plan for everyone who works for you, identifying two things you and the employee are working together to develop in the next year," Kappus recommended.

"Delegation is the single most important management skill you need to get better at," he said, noting that it has "the most potential for the worker and employee to have a win-win situation."

Besides giving a subordinate the responsibility for an end result, a manager must also give him the authority to determine how to achieve the end result — and resist the temptation to tell him how to do it.

"That's a scary part," Kappus admitted, "because you're putting a piece of your career on the line."

On the other hand, a manager does not want to abdicate all responsibility totally, he emphasized. "People respond to inspection points along the way."

In some cases a checkpoint will be once a month, and in other cases, "you start getting nervous after one or two hours," he said.

At the start of a new manager-subordinate relationship, the manager should communicate his expectations, indicate how he will measure success or failure, encourage the participation of the subordinate in setting goals and prioritize tasks.

The manager should also set up appropriate checkpoints based on the worker's experience and competence and indicate each task's degree of difficulty.

"The subordinate wants to know whether success means just that he will keep his job or that every time he comes in the room you'll stand up and applaud," according to Kappus.

At the end of a project period, the manager must give feedback, evaluation and a differential reward, Kappus recommended.





CW Photo by M. Zientara

Dominic Mezzanotte

Systems Planning Method Outlined

By Marguerite Zientara
CW Staff

BOSTON — The difference between a successful and an unsuccessful system implementation often hinges on planning, which can save time and money by solving potential problems before they occur.

A systems planning methodology was presented here recently by the person who made that observation, Dominic Mezzanotte, assistant director of Systems Planning for Baltimore-based Chessie System, Inc.

Speaking at a session on "Systems Planning: The Neglected Discipline" at the Association for Systems Management's annual conference, Mezzanottee said that "the development of an information system, regardless of size and complexity, requires the planning, organizing, coordinating, control and direction of many activities.

"All projects should be divided into tasks," he advised, "the completion of which indicates milestones of progress."

The five steps to project management, Mezzanotte said, are: (1) definition and analysis of the problem and business requirements, (2) definition of the functional requirements for the system, (3) system design and user acceptance, (4) implementing the system solution and (5) installation follow-up and post-conversion evaluation.

One of the major factors in the success of a system is "how well the lines of communication among involved parties have been set up," he stressed. From the project leader, there should be open communication to and from MIS management, the systems group, technical support people, the data base administrator and user departments.

A proven vehicle for such communication, according to Mezzanotte, is a project working group usually made up of systems staff personnel, technical staff personnel, user group personnel and sometimes outside hardware/software personnel. "The meetings should not be used as the vehicle to design the system," he cautioned, but rather to compare projected and actual timeframes, costs and product quality.

As part of Step One — the definition and analysis of the problem and business requirements — it is of key importance to establish system boundaries, "even though you might not be the most popular person for doing it," Mezzanotte said. "You have to be hardheaded about that."

A failure to do so can result in time and cost overruns, "in that additional tasks and requirements are allowed into the project with no provision made for redefining project plans, schedules and time and cost estimates."

Step Two — definition of the functional requirements for the system — will result in a proposal that is "a concise and thorough model of the system," Mezzanotte said.

Step Three — system design and user acceptance — means "you can now develop a very detailed plan, identifying all or most manpower and material needs and costs, privacy and security needs and lead times needed for equipment delivery."

In implementing Step Four, the system solution, "a great deal of coordination is necessary to ensure everything is ready on the system implementation or 'target' date," he said.

Step Five — post-conversion evaluation — is "not done often enough," Mezzanotte noted. A report should be written that indicates whether the system meets the basic requirements and operates within stated boundaries.

INTRODUCING A CONVERSATIONAL TERMINAL WITH A LOT TO SAY FOR ITSELF.

An attractive low price plus a long list of features make the 5410 terminal from Teletype Corporation a great value. In fact, it's hard to beat this ANSI 3.64 based asynchronous terminal's cost-effectiveness for applications such as time sharing, inquiry response, data retrieval and software development.

Unlike most terminals in its class, the 5410 lets you change from an 80 to 132 column mode so that you can put more data—even accounting spreadsheets—on the screen.

No matter which mode you're in, you'll get high resolution with crisp, easy-to-read characters.

The 5410 is also surprisingly user-friendly. For starters, it has 8 programmable function keys that can be down-line loaded from a host or entered locally by the operator. These non-volatile keys are easily associated with screen labels. When the operator goes to another application and changes the function keys, the screen labels can change right along with them. There's no need to put plastic strips or messy tape on the screen.

When it comes to optioning, the 5410 features an English menu (see screen on the left) for fast set up. The operators don't have to flip DIP switches or figure out complicated codes. They'll also appreciate the 5410's character attributes which include blinking, boldfacing, underlining, non-displayed and reverse video.

Of course, we had the operator in mind when we designed the 5410. That's evident in the detachable, low-profile keyboard that's light enough to rest on the operator's lap. And in the tiltable, non-glare screen with brightness control.

The 5410 also stretches to suit your needs as well as the operator's. For example, it features a standard EIA printer port; the internal software to do editing, split screen and line drawing graphics; and on-line speeds up to 19200 bps.

Another nice thing about the 5410 is its ability to diagnose its own problems. And that if service ever is needed, our established nationwide service organization lets us respond quickly to your call.

When you size up conversational terminals, you'll find our 5410 speaks for itself.

TELETYPE: VALUE SETS US APART.



Teletype Corporation. 5555 Touhy Ave., Dept. 3223-A, Skokie, IL 60077. Tel. 1 800 323-1229, Extension 101. "Teletype" is a registered trademark and service mark of Teletype Corporation.

Communication Said Key to Effective Info Center

By Lois Paul
CW Staff

ANN ARBOR, Mich. — "To have an effective information center, you need good hardware, good software, a good support staff — and you have to communicate, communicate, communicate."

This advice was offered by James W. Johnson, vice-president and innovation officer for The Equitable Life Assurance Society of the U.S., to attendees at The Conference on Information Centers and Fourth-Generation Languages, held here recently by the University of Michigan and Database Design, Inc.

The most important component of the information center — the facility set up within a DP department to train and encourage end users to do their own computing — is the "spear carriers," Johnson said. These are the people who set up the data base and take extracts from it for the end users.

"The fundamental problem in using this kind of facility is the problem with executives using the data," he said, because they do not understand the terminology and have difficulty visualizing the data base concept. "I have come to believe it is the people who now do the selection for them — their staff — who will be the primary users."

The Equitable's information center is using Information Builders, Inc.'s Focus as its fourth-generation language, as well as SAS Institute, Inc.'s SAS statistical analysis package. Johnson's group has developed a programmer's workbench that functions as a common window to its major applications — the financial information system (FIS) and personnel management information systems (PMIS). Both systems are based on applications software packages that run on IBM VM systems under CICS.

In addition, the group developed a procedure for cataloging reports, prompts for generation of reports and graphics and a front end for beginning users of the Focus language.

The lessons The Equitable has learned regarding information centers to date, according to Johnson, are:

- There must be a common architectural framework for all applications, such as The Equitable's programmer's workbench.
- The service orientation is crucial.
- There is a need to "innovate in the context of a business need."
- The information center requires a separate organization.
- Significant technical support is needed for a successful information center, Johnson said, noting that his facility ran ahead of its support.
- End-user computing must be marketed.
- Performance issues require attention.
- There is a significant demand for executive decision support that is not being met.

"True user friendliness is very difficult to achieve," Johnson said. However, his executive users are responding in quite different ways to use of the information center. One executive used the center's tools and data to develop a five-year forecast for a subsidiary. His experience apparently was a good one because he brought his findings to his staff afterward, along with a series of questions.

"Others look like you offered them raw kangaroo meat for lunch," Johnson said.

After his group gave 75 demonstrations of the information center's capabilities, Johnson said the immediate reaction was "This would be great for group insurance." A prototype of an underwriter experience ledger was put up in three weeks using the programmer's workbench. The system has been operational and still is running under Focus.

"The large files give us a headache, it costs a lot of money, but the underwriters are happy and are writing programs. I had never thought it would be happening," he said.



Selecting software is really a game of strategy: positioning the right product at the right time for the most effective results.

At Whitesmiths, Ltd., our full line of software products is designed to do just that and more. Our time-tested compilers are available for five architectures, complete with Pascal translators and cross-support for a wide range of environments. From the MC68000, to the IBM PC, to the DEC Professional, our compilers and cross compilers cut software development time and reduce dependence on operating systems and instruction sets.

Idris, our exclusive operating system, is powerful, small and extremely portable. Written almost entirely in C, it runs where other operating systems can't even fit – on an MC68000 with no memory management hardware, for example, or on a bank-switched 8080 or Z80. And it outperforms UNIX on comparable systems – an MC68000 with memory management hardware, for instance, or any PDP-11 or LSI-11. It even makes good use of a VAX, so you know you won't outgrow it!

In addition, our full line of Software A La Carte lets you select just the pieces you need to tailor our products for your unusual requirements. From portable libraries to special purpose tools, all A La Carte items are tested, easy to use, and very affordable.

To make things even simpler, Whitesmiths, Ltd. has introduced a new marketing tool: the Authorization Seal. Instead of hassling with complex license agreements and other legal stumbling blocks, you simply affix a serially numbered Authorization Seal, issued with each sale, to any machine that retains a copy of our software. End of hassle. All our customers – end-users, OEMs, and sublicensors – benefit from the elimination of multi-tier licensing agreements and detailed record keeping.

Compilers, Idris, Software A La Carte, and the Authorization Seal: together they can position you for today's competitive market – and tomorrow's. Before you make your next move, call or write to Whitesmiths, Ltd. today. We'll be glad to help you play to win.

Whitesmiths, Ltd.,
97 Lowell Road, Concord,
MA 01742, (617) 369-8499
TLX 951708 SOFTWARE CNCM.

Whitesmiths, Ltd.
Software Craftsmen

UNIX is a trademark of Bell Laboratories. DEC Professional, VAX, PDP-11 and LSI-11 are trademarks of Digital Equipment Corporation. IBM PC is a trademark of International Business Machine Corporation.
Distributors **Australia**, Fawnray Pty Ltd., P.O.B. 224, Hurstville, NSW 2220 (612) 570-6100; **Japan**, Advanced Data Controls Corp., Chiyoda-ku, Tokyo (03) 263-0383; **United Kingdom**, Real Time Systems, Newcastle upon Tyne 0632 733131

Despite Challenge From 16-Bit Models

Datapro Finds 8-Bit Micros Still Dominate Sales

By Bruce Hoard
CW Staff

DELRAN, N.J. — Although they are being challenged by 16-bit models, 8-bit microcomputers continue to dominate sales, according to a report from Datapro Research Corp. titled "How to Select Microcomputers for the Corporate Environment."

One reason for 8-bit dominance is the vast quantity of installed, fully debugged software designed to run on 8-bit microprocessors under 8-bit microcomputer operating systems, the report noted. In addition, there are many more 8-bit microcomputers in the marketplace, and they are generally less expensive than 16-bit models.

However, more sophisticated applications requiring more memory will appear in the future on 16-bit microprocessor-based products, the study noted. Beyond that, the 16-bit microprocessors and some 8-bit microprocessors with extended memory capability will capture an increasingly large share of the market as memory prices fall and a large number of advanced applications packages become widely available.

"In the corporate environment, the trend is to recognize and accept the entry of microcomputers as another tool to improve the productivity and quality of the decisions made by technical and management employees," the 26-page report claimed.

It stated that buyers should consider vendors' reputations, their levels and availability of service, their market share and their stability. Market share and reputation are not meaningful for new entries into the marketplace, the report noted.

Protect Investments

The study suggested that buyers can protect their investments regardless of vendor by purchasing a system that utilizes one of the standard microcomputer bus architectures such as S100, IEEE-488 or Multibus.

The service provided for microcomputers is not as good as that offered for large computers because of their low prices. That deficit is balanced off by high microcomputer reliability. Mean time before failure on most components of a microcomputer system is expressed in years and the mean time to repair is expressed in minutes.

New microcomputer users can waste a lot of time learning how to operate their machines. Yet if they do not take enough time, they may not use them as efficiently as possible or take advantage of all their capabilities. To avoid such problems, the report recommended a training program that:

- Instructs users in the use of the most broadly distributed software packages.
- Provides information on the use of the operating system and its utilities.
- Informs users of the basic requirements, responsibilities and procedures for protecting their data and equipment.

With respect to microcomputer costs, the report maintained that "you will not know the full cost of a microcomputer system until you make a complete assessment of your hardware and software requirements. Peripherals can be very expensive and purchasing a large number of software packages can add up to a substantial sum of money."

Calling applications software the "critical component" of the microcomputer system, the report noted that the system is only as valuable as the applications it runs. In some cases, hardware selection may actually hinge on the software to be run.

The report claimed it is unlikely that users will find exactly what they need in many applications packages. What they should do is determine which of the available programs provide most of what they want, lacking only in areas without which they can get by.

Some applications packages may not be powerful enough to deal with problems or the size of complexity presented in an operation. A package that is too powerful is likewise of little use.

The report is available for $19 from Datapro Research at 1805 Underwood Blvd., Delran, N.J. 08075.

EXPAND YOUR SYSTEM/34 BY ADDING MAGNETIC TAPE
CALL: 800/638-9665

Let one of our Applications Engineers explain how you can attach the Mitron STD 1600 magnetic tape drive to your IBM System/34. (In Maryland, call 301/992-7700).

MITRON
Systems Corporation
2000 Century Plaza
Columbia, Maryland 21044

EDPAA to Meet in Los Angeles

LOS ANGELES — The EDP Auditors Association (EDPAA) will hold its 1983 international conference here June 19-22.

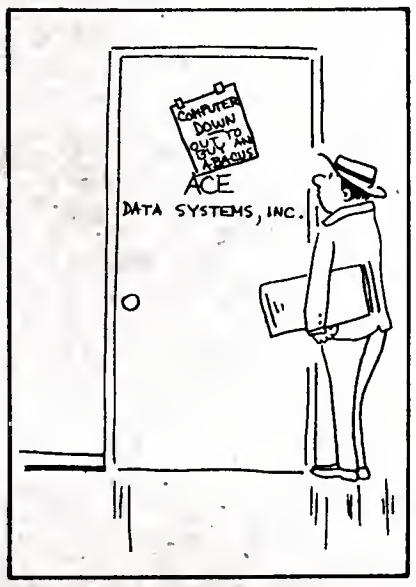
"Preparing for New Challenges" is the theme of this year's conference. The keynote speaker will be Charles P. Lecht, founder, president and chairman of the board of Lecht Sciences, Inc.

Conference tracks will focus on computer auditing, advanced computer auditing, security and contingency planning, technical methods, special interests, personal growth and small computers. The registration fee is $400 for members, $450 for nonmembers. More information is available from EDPAA at 373 S. Schmale Road, Carol Stream, Ill. 60187.

ICCP Says 4,300 DPers Took CDP Exam on May 7

CHICAGO — Some 4,300 people registered for the May 7 Certificate in Data Processing (CDP) examination, with candidates taking the test in 165 test centers in the U.S., Canada and 17 foreign countries.

The Chicago-based Institute for Certification of Computer Professionals (ICCP), which administers the exam, claimed that a record number of people took the 1983 exam.



"Certification for computer professionals still has its critics," Robert P. Campbell, president of ICCP, maintained. "But the numbers show it has its proponents as well."

One criticism of the certification is the lack of evidence that it influences hiring or promotions. "It is the general consensus that recruiting firms don't consider CDP a major factor," Martin Kantor, a spokesman for ICCP, said.

The CDP exam has been offered since 1962. It was originally given by the Data Processing Management Association. In 1973, ICCP took over administration of the test.

An estimated 24,000 DPers hold a CDP, Kantor said.

PDP-11 & VAX® users...

ComDesign's TC-3 Concentrates Multiple Over One . . . Without 1 Terminals Phone Line a DZ11!

- COST SAVINGS TO 90% Totally eliminates DZ11s, extra modems and phone lines.
- STATISTICAL MULTIPLEXING Up to eight 9600 bps terminals over 1 phone line.
- ERROR CORRECTION Phone line errors eliminated automatically.
- PROVEN RELIABILITY Over 3 years MTBF.
- FAST ECHO RESPONSE
- CONCENTRATION Multiple terminals—one line.
- COMPLETELY TRANSPARENT No software changes needed.
- BUILT-IN SYSTEM MONITORS Real-time data and signal displays, statistics and error counters.
- POWERFUL DIAGNOSTIC PANEL Modem loop-back, unit self-tests, and terminal diagnostics.

Only $240/mo. for a TC-3 . . . Connect 8 Terminals on 1 Phone Line, Without a DZ11.

For further information and the sales office for your area call toll-free (800) 235-6935 or in California (805) 964-9852.

ComDesign
ComDesign, Inc.
751 South Kellogg Avenue
Goleta, California 93117

* Registered Trademarks of DEC

IMPROVE PROGRAMMER PRODUCTIVITY

EXCHECK

REDUCES –
- PROGRAM MAINTENANCE TIME
- TESTING AND DEBUGGING TIME
- COBOL CODING ERRORS
- COMPILATION TIME

PROVIDES –
- AUTOMATIC FILE LAYOUTS
- AUTOMATIC DOCUMENTATION
- LINE-ON-LINE CROSS REFERENCES
- COMPLETE DATA MAPPING

FOR S/370 FAMILY, DOS and MVS

ARKAY COMPUTER INC.
24 Manor House Road
Newton Centre, MA 02159
(617) 332-4932

End-to-End Encryption Called Useful for Common Carrier Nets

By Robert Batt
CW West Coast Bureau

OAKLAND, Calif. — End-to-end encryption schemes are increasingly attractive to those who want security on common carrier packet-switched networks.

This was the theme of a presentation made here last week at the 1983 Institute of Electronical and Electronics Engineers (IEEE) Symposium on Security and Privacy by Derek Barnes of the UK Ministry of Defense.

Barnes said that in order to achieve a high level of secure end-to-end schemes, a number of techniques must be used in conjunction with one another. However, he pointed out that the technology now exists for building such systems for both commercial and military applications.

Barnes told the symposium, sponsored by the IEEE Computer Society Technical Committee on Security and Privacy, that packet-switched network security can be provided by various combinations of four techniques — encryption, authentication, access control and computer security.

End-to-end security can be utilized in any community of users, he claimed, to protect their particular data on a common carrier packet-switched network. "In any end-to-end security scheme, it is necessary to place some trust in the operation of computer systems. For example, it is necessary to trust computers to isolate the plaintext data from the transformed data and to provide a mechanism for allowing some control information to bypass the transformation process," he explained.

Barnes added that while the reference monitor — which is a combination of machine hardware and trusted software, often known as a security kernel, used to control the operation of a computer system — is a well-known concept in computer security, very few machine architectures are suitable for its true implementation.

"Formal techniques have not yet been established for proving completion and isolation properties. It is in these areas that design mistakes often occur in present systems, particularly if they require large or complex trusted computing bases," he said.

Nevertheless, Barnes maintained, it is currently possible to apply successfully formal verification techniques and rigorous design practice to dedicated small systems that are isolated from general-purpose operations.

"Such dedicated systems can, for example, be components of the network or even network front ends for general-purpose systems. Thus, while it is not possible to provide multilevel secure computer systems, multilevel secure networks can be realized now," he concluded.

Data Base View Depends On System, Specialist Says

OAKLAND, Calif.— The question of who should define the use of data base views in securing multilevel data base management systems (DBMS) was the subject of a paper presented at the Institute of Electrical and Electronics Engineers 1983 Symposium on Security and Privacy here last week.

Assignment of data base view definition responsibility depends on whether computing policy is centralized or decentralized, according to Billy Claybrook, data security specialist at Mitre Corp. in Bedford, Mass.

"In commercial DBMS," Claybrook explained, "a data base administrator customarily defines user subschemas. Another possible solution is to allow individual users to define views for their own private use, but views defined for nonprivate use would be under the control of a system administrator or security officer."

In systems where views must be classified on a systemwide basis, Claybrook suggested that view definition be under the control of a security officer. "It should be clear that modification of view definitions by users other than a centralized authority can be catastrophic, perhaps affecting the entire data base," he warned.

Claybrook suggested the establishment of a hierarchical structure regarding who should define views and grant access to information. "For example, a system administrator would own all data bases, authorize user access to the data base and have the right to perform all operations. Owners could define private views, perform operation on their own views and authorize user access to their private views," he concluded.

Justice Study Addresses Computer Crime

SPRINGFIELD, Va. — A five-volume study of computer crime topics has been completed by the U.S. Department of Justice with the issuance of "Computer Crime: Computer Security Techniques."

The final volume describes 82 computer security procedures used in several government, industrial and academic organizations. Each procedure was evaluated for strengths, weaknesses, cost and target vulnerability, a spokesman said.

Controls reportedly are described for achieving manual assurance of data integrity, physical and operations security, management-initiated controls, computer program development and maintenance, computer system controls and terminal access controls, according to the spokesman.

Each of the five volumes can be purchased separately: "Computer Crime: Computer Security Techniques," for $13.50; "Electronic Funds Transfer Systems and Crime," for $13.50; "Legislative Resource Manual," for $11.50; "Criminal Justice Resource Manual," for $19.50; and "Expert Witness Manual," for $11.50.

In addition, the entire set of five volumes can be purchased for $61.50, the spokesman said.

All five volumes are available from the National Technical Information Service, which is located at 5285 Port Royal Road, Springfield, Va. 22161.

A Major Conference
Microcomputers and Organizational Productivity
June 7 & 8, 1983
Boston Park Plaza Hotel
Boston, Massachusetts

Keynote Speakers:
Peter G.W. Keen, Micro Mainframe, Inc.
C. Lawrence Meador, Research & Planning, Inc.
Mitchell Kapor, Lotus Development Corp.
Frederic G. Withington, Arthur D. Little, Inc.

Panel Discussions on:
• Software Development
• Management Experience
Vendor Demonstrations of Micro Software for Major Organizations

Contact: Micro Conference
215 First Street
Cambridge, MA 02142
(617) 864-0900

Afips Publication to Focus On Anniversary of IBM 701

ARLINGTON, Va. — An entire issue of the *Annals of the History of Computing*, produced by the American Federation of Information Processing Societies, Inc. (Afips), has been devoted to the subject of the 30th birthday of the IBM 701 computer.

The editor of this special issue is Cuthbert Hurd, who in 1951 convinced IBM — which until then had primarily built only punched-card machines — to invest its resources in an all-electrical, high-speed digital computer to aid the Korean War effort.

First called the Defense Calculator, the Model 701 was formally introduced at a ceremony in New York in April 1953. Over the next two years, 19 machines were delivered to defense-related installations around the country.

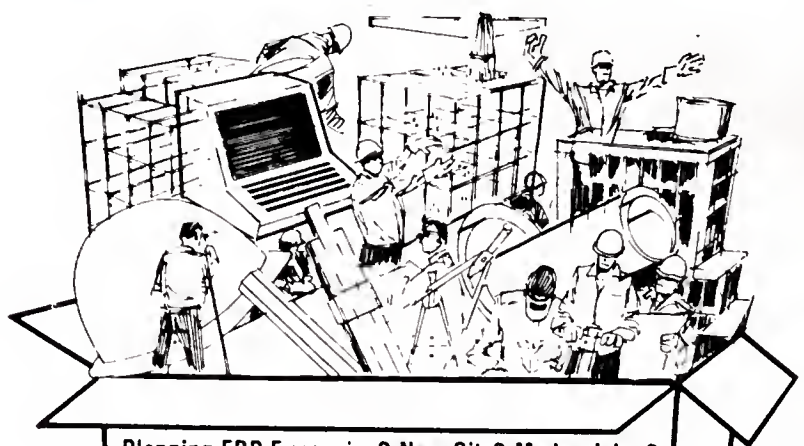
This volume of *Annals of the History of Computing* is available to Afips members for $9 and to others for $12, a spokesman said. Further details may be obtained from Afips at Suite 800, 1815 N. Lynn St., Arlington, Va. 22209.

Meet to Cover User Manuals

PITTSBURGH, Pa. — "Developing Effective User Manuals," a one-day seminar sponsored by Carnegie-Mellon Communications Design Center, will be held here on June 25.

The seminar is for computer programmers and writers who produce software documentation for users and is based on research conducted at the Communications Design Center during the past year.

The registration fee is $100. More information is available from the center at Carnegie-Mellon University, Pittsburgh, Pa. 15213.


Planning EDP Expansion? New Site? Modernizing?
WE PACKAGE DATA CENTERS
We design, engineer, build — meeting and beating deadlines, even when building over, around or under you — without costly interruptions so you can maintain your business as usual. Most of our projects are accomplished in half the time.
We are the engineers and builders of more than
600 DATA CENTERS
If you are a quality conscious company wisely interested in performance as well as economy, we can construct a building to house your computer facility, alter an existing floor, or rejuvenate and expand your present facility, including your total support area.
Simply call or write to arrange a convenient meeting to discuss your project, concepts, and budgets. In confidence, of course.
(212) 674-8600
DP FACILITIES INC., NATIONAL
Div. F.C.I. Facilities Construction, Inc.
250 Park Ave. South, N.Y., N.Y. 10003


THIS IS A CHAIR. NOW SIT UP STRAIGHT AND LISTEN.
If you're in a chair right now, sit so you're just on the edge of the seat and tuck your legs under the chair. Your posture just naturally straightened. Your lower back isn't carrying your upper body weight. There's less strain on your back and neck. Your circulation is improving.
Sitting in a Balans® chair does all this and more. And it's as attractive as it is comfortable.
For more information about the Balans chair, don't just sit there, write or call today. THE BACK STORE™
We're aching for your business.

THE BACK STORE™
33 Highland Avenue, Dept. CW-3,
Needham Heights, MA 02194
(617) 449-6100
Take Exit 56E off Route 128.

'Trusted DP Systems' Seen Vital to Net Security

By Robert Batt
CW West Coast Bureau

OAKLAND, Calif. — The emergence of "trusted computer systems" will be a vital contribution to the security of data processing networks, Whitfield Diffie, manager of secure system research at Bell-Northern Research of Mountain View, Calif., told attendees at the recent Institute of Electrical and Electronics Engineers Symposium on Security and Privacy here.

The term "trusted systems" has been coined to identify computers that employ enough hardware and software integrity measures to allow the distribution of highly confidential or classified data. Together with encryption devices, Diffie claimed, they are essential components for making communications networks secure.

However, there is an element of competition between the two concepts, Diffie said. "At one extreme, a network can employ end-to-end encryption as its primary security mechanism. In such a network, two users in secure contact rely on their exclusive possession of a common key to guarantee that their messages cannot be understood or imitated by others, regardless of whether intervening components of the network perform correctly or not." In this case, he asserted, trusted systems are limited to making decisions on how keys are to be distributed.

"At the other extreme, a network can employ cryptography only to create the appearance of overall physical security. Link encryption, for example, is used to protect the exposed communications paths and for no other purpose. The problem is reduced to that of designing a multilevel secure operating system; the fact that it may span continents is concealed," he added.

Diffie said the advantage of encryption is that it is a well-developed art, while trusted system technology is relatively new and prone to the performance and cost problems common with new technologies.

"The user of a system that relies primarily on trusted systems technology may be extremely well protected from opponents outside the network, but can have no true security from the network builders and administrators." Such a system, he suggested, is best suited to users who are employees and act within a hierarchical structure.

"The user of an end-to-end encrypted network, on the other hand, can be very certain that his traffic is protected from everyone except the person he is conversing with." He noted, however, that it could be argued that encryption is inflexible and cannot adequately support the complex security policies required by large corporations.

Researchers Say Security Kernel Posing Obstacle

OAKLAND, Calif. — Attempts to construct secure general-purpose operating systems have been largely unsuccessful because of the reliance on a security kernel as the primary mechanism for enforcing privacy, according to a paper presented at the recent Institute of Electrical and Electronics Engineers Symposium on Security and Privacy.

"Because it provides an additional level of interpretation, a security kernel necessarily imposes some performance degradation [which] is likely to be greater when general-purpose, rather than specific, applications must be supported," explained coauthors J.M. Rushby and B. Randell of the University of Newcastle upon Tyne in the UK. In addition, "the division of a conventional operating system into untrusted and trusted [security kernel] components is a complex and expensive task which cannot easily accommodate changes and enhancements to its base operating system."

The answer to such problems, the researchers asserted, is to build a distributed secure system rather than a secure operating system.

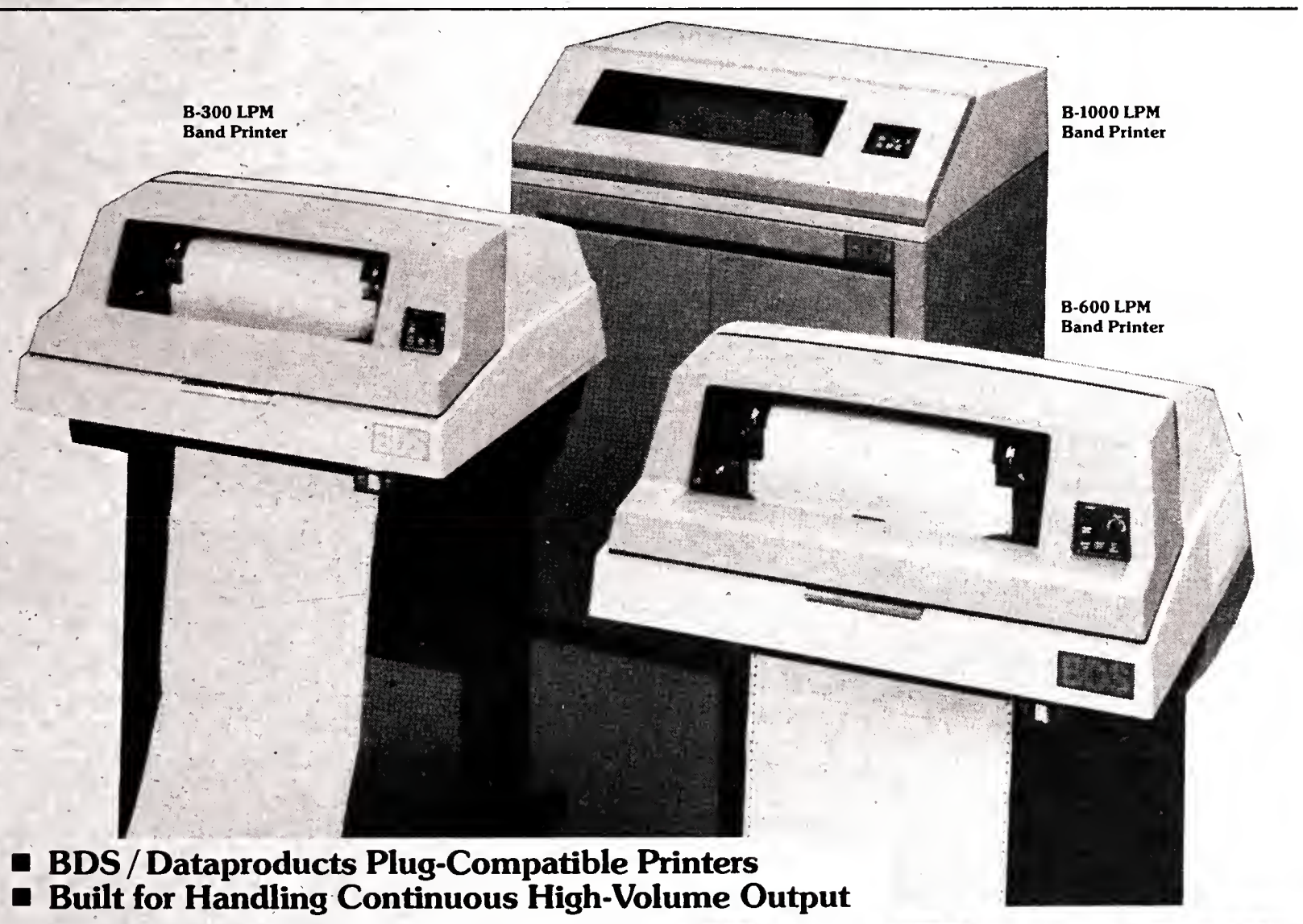
The most significant feature of this approach, they claimed, is that it allows host machines that are not trusted systems to provide their full functionality and performance, while enabling the security mechanisms to be isolated, single-purpose and simple.

"With this approach, it is possible to construct secure systems whose verification is more compelling and whose performance, cost and functionality are more attractive than is the case at present," the authors added.

Group Established For DP Recruiters

NEW YORK — The Wall Street EDP Recruiters Association is the name of a recently formed group of people involved in DP recruitment.

The group convenes on a monthly basis to discuss recruitment, benefits, training programs and agency usage. More information on the group is available from Gary Mass at EDP Recruiters, Drexel Burnham Lambert, Inc., 24th Floor, 60 Broad St., New York, N.Y. 10004.



■ BDS / Dataproducts Plug-Compatible Printers
■ Built for Handling Continuous High-Volume Output

IBM · DEC · HP
BURROUGHS

BDS

■ Since 1975, the Largest Independent Supplier of Plug-Compatible Printer Systems
■ Over 5,000 Systems Installed
■ Complete Line of High Quality Daisy Wheel, Matrix and Band Printers. 55 CPS to 2000 LPM
■ 30-50% Savings
■ Quick Delivery (30 Days or Less)
■ Reliability Built-In (BDS Controllers and Interfaces)
■ Low Maintenance Cost
■ TRW Nationwide Service
■ Price Includes Installation and 90 Days Parts and Labor Warranty

I would like more information on plug-compatible printers
☐ 55 CPS Daisy Wheel Printer
☐ 80-300 CPS Matrix Printer
☐ 300-2000 LPM Band Printers

Name_____
Title_____
Company_____
Address_____
City_____ State_____ Zip_____
Phone (_____) _____

(415) 326-2115

BDS Corporation
1120 Crane Street
Menlo Park, CA 94025

U.K. (734) 730025 Australia (03) 241-8901



CW Photo by P. Gillin

Interview potential consultants 'to make sure the chemistry is good,' Sycomm's Maurice G. Weinberg advised recently. 'These people will be getting into some sensitive areas of your business.'

Guidelines Offered at Software Meet

How to Choose a Consultant: Exec

By Paul Gillin
CW Staff

CHICAGO — The value of using a data processing consultant can be greatly enhanced if a manager follows some guidelines in selecting, accommodating and monitoring the research done by the consultant.

Those guidelines were presented at a session entitled "Effective Use of Consultants" at the recent conference of Future, the user group of Management Science America, Inc.'s (MSA), General Ledger/Fics system held here. The speaker was Maurice G. Weinberg, director of management consulting at Sycomm Systems Corp. of Middlesex, N.J.

Managers who shy away from using costly consulting services in favor of tackling the problems themselves should ask whether they are actually wasting money by taking away time from more pressing projects, Weinberg said. Consultants are useful for a range of applications including evaluating current systems, choosing security and disaster backup methods and performing system audits, he noted.

If you choose to hire a consultant, "don't try to solve a political problem, like getting rid of a manager you don't like," he said. "What if the consultant finds out the manager is doing a good job?"

Make sure you do not already have a solution in mind, Weinberg stressed. "You want a broad scope of solutions."

Before looking for a consultant, develop a set of objectives and goals which can be used to monitor the project throughout, he said. Goals should be stated up front to avoid having to change direction in midstream.

Do not choose a consultant by browsing through the phone book. "Talk to business associates to get references. Ask your accountant or banker," he suggested. Do not be afraid to ask questions to ensure you get a reputable firm. Ask the consultant for client references, and call the references to identify possible trouble spots.

One often ignored task is to find out whether the consultant has a vested interest in recommending a solution. "If you call up Big Blue for a proposal, they're always going to recommend Big Blue," he said. Similarly, avoid hiring a consultant who will recommend his own software package to solve your problem.

On a major project, it is a good idea to identify three or four candidates and get a proposal from each. And before making your selection, interview the consultant "to make sure the chemistry is good. These people will be getting into some sensitive areas of your business," he noted. A consultant who consistently stresses his strengths in areas other than your needs is probably not for you, Weinberg said.

Put Price Last

When making your selection, "please, make price your last consideration, especially on major projects," he advised. Also, look at the characteristics of the company under bid. "Will the total resources of the company [if necessary] be brought to bear upon your project?" he asked. Small consulting firms are particularly vulnerable to pulling experts off your job if another one comes in, he said. Make sure the consultant will be yours for the duration.

The initial meeting with the consultant should set out the objectives of the project and provide for regular client reviews. Responsibilities should be laid out in advance, he advised. The client needs to provide office space and access to the necessary people and materials. The consultant should provide regular reports, working hours and an idea of what resources he needs.

During the project, the manager should attempt to provide all the information the consultant needs, Weinberg advised. A teamwork spirit is desirable, and the best way to do that is to assign people within the organization to work with the consultant to answer necessary questions.

"There always is a problem somewhere with someone not letting go of data," he said. "But the less data he has to work with, the worse the answer will be." Weinberg said he usually requests three to four times as much data as he actually uses, "because there might be little pieces here or there that I'll find useful."

CICS

PRO²

Professional Results Online

Get Back to the Basics with PRO²

PRO² - CICS Application Development System
- Puts DP professionals back in touch with the basics
- Creates structured CICS COBOL programs
- Generates BMS maps
- Provides debugging aids
- Allows control of VSAM and DL/I files

PRO² gives you:

PRODUCTIVITY ..... by allowing your programmers to create CICS applications in hours, rather than days.
KNOWLEDGE ..... by teaching your programmers how to code COBOL Command Level Programs and BMS Maps.
STANDARDIZATION .. by using consistent, structured coding techniques to create all of your CICS applications.
FREEDOM ..... by letting you stay in control of your data processing environment.

WRITE or CALL TODAY:
Larry Chase
Decision Point, Inc.
1199 Shoreline Drive, Suite 260
Boise, Idaho 83702
(208) 342-8766

PRO² is a product of Prodata, Inc. Marketed in U.S. and Canada by Decision Point, Inc.

Lawsuits Seen on the Rise With Systems Use

By Jeffry Beeler
CW West Coast Bureau

WALNUT CREEK, Calif. — Customers and vendors will increasingly find themselves embroiled in contract disputes involving systems that fail to work as the users intended, according to a local attorney specializing in computer-related litigation.

The reason such disputes are likely to increase is that systems use in the business world is rapidly growing, lawyer Richard Perez said here during a recent East Bay Chapter meeting of the Association for Systems Management.

As the number of systems installations steadily increases, so too will the population of disgruntled users and the volume of contract quarrels that could eventually end in lawsuits, Perez said during his presentation late last month.

No One Can Escape

Although small, technically illiterate companies will probably account for the majority of contract fights, no firm will be entirely immune from the problem of ineffective systems and unresponsive vendors, not even big businesses with professional computing staffs, he said.

Perez, whose legal counsel won nearly $3 million for the Oakland, Calif.-based Glovatorium, Inc. in its fraud suit against NCR Corp., described most users as "inordinately patient" in working with uncooperative vendors and trying to debug bulky systems. Perez's characterization contrasts sharply with the view expressed by many vendors that often accuse users of being "trigger happy" in filing breach-of-contract or similar suits, he said.

Some of the system elements that are most frequently the subjects of user-vendor disputes include items like:

- Keyboards, which sometimes suddenly quit working and, in so doing, pave the way for the corruption of users' data files.
- Documents that are supposed to show the same balances but for unknown reasons fail to do so.
- Software that fails to provide adequate audit trails.
- Memory that is sometimes insufficient in capacity to perform a customer's intended applications.
- CRT terminals that a system sometimes proves unable to support in adequate numbers to meet a users' needs.

When confronted with complaints that their products fail to work as expected, uncooperative vendors often respond with one of two classic counterclaims: that the user's operators are incompetent or that the customers are using their systems differently from what had originally been indicated, Perez said.

If users become so dissatisfied or frustrated that they threaten to sue, unresponsive vendors often resort to a second set of stock replies, he added. They either tell customers they waited too long to file suit or cite contract provisions that apparently limit the amount of a buyer's remedies to the purchase price of the system.

On the surface, the "limited remedy" argument may sound so convincing that users might conclude they have no legal recourse and might abandon any plans to sue, Perez said.

But a contract clause limiting a customer's legal or financial remedies can be disqualified if a vendor can be proven guilty of fraud or if the company dragged its feet in addressing a user's problem.

The damages that a user can collect from a negligent vendor as a result of a lawsuit can allow the customer to recover far more than just the original cost of the system. The potential award can also cover the damages that a customer's business sustained during the organization's unsuccessful effort to get a defective system working to specifications, Perez said.

Database '83 Set for May 15-18

DENVER — Database '83, the meeting of the independent Cullinet Software, Inc. IDMS User Association, will be held May 15-18 at the Marriott-City Center here.

Speaking at the conference will be Francis A. Frank, vice-president of professional services at Keane, Inc., who will address the issue of "Productivity Management"; Shaku Atre of Atre International Consultants, Inc., who will discuss "Effective Data Base Design"; and Edward Yourdon, president of Yourdon, Inc., who will focus on "Future Trends in Software Development."

Database '83 also will feature more than 30 seminars presented by IDMS users and Cullinet Software representatives. These sessions will cover such topics as "Microcomputers Interfacing to Mainframes," "Productivity Aids and Performance Testing" and "Using Data Base for More Than Storing Information."

Formed in 1974, the IDMS User Association is an independent nonprofit organization with more than 400 members. More information about the organization and its upcoming conference is available from Database '83, 8702 Delray Circle, Westminster, Calif. 92683.

The easiest way to put together a national service team.



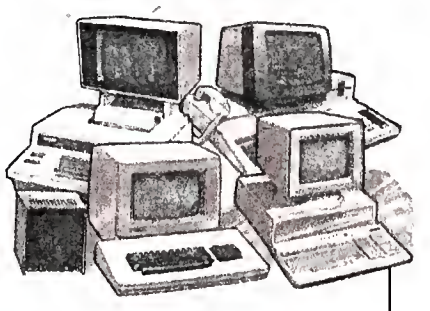
One easy phone call can set you up with one of the largest, best qualified service teams in the nation. Western Union's Field Service. We have all the people and equipment you need to provide fast, reliable, high-technology service, coast to coast.

425 locations nationwide.

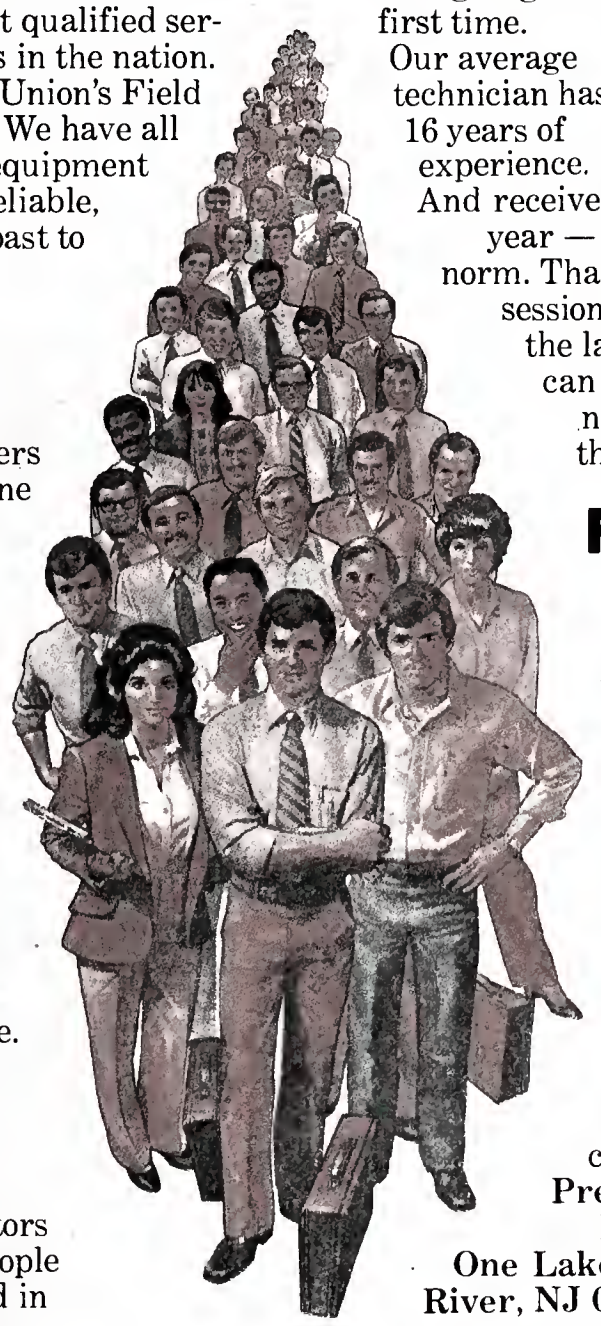
Wherever your customers are, we're nearby. That's one reason why our response time can be 33% faster than our competition's—we consistently average under four business hours. Restoral time is fast, too. Technicians can get most any part they need, quickly, from our computerized inventory system. And, in over 20% of all cases, a service call isn't necessary. We use our central computer to solve the problem by phone.

4,500 service experts.

From service coordinators to field technicians, our people are among the best trained in the business. They do things right the first time.



Our average technician has 16 years of experience. And receives 20 days of training per year — up to twice the industry norm. That includes video training sessions to keep them on top of the latest technologies. So we can be ready to service your new products even before they hit the market.



From Apple to Xerox.

No matter who you are, we can be fully qualified to service your office communications or automation products. We have the expertise, the equipment and the people.

Find out how much our service team can do for your product. Call 201-934-0200 or Telex 642-474. Or send your business card to: Bill Thompson, President, Western Union Field Service Division, One Lake Street, Upper Saddle River, NJ 07458.

Western Union Field Service.
Nationwide, high-technology service.

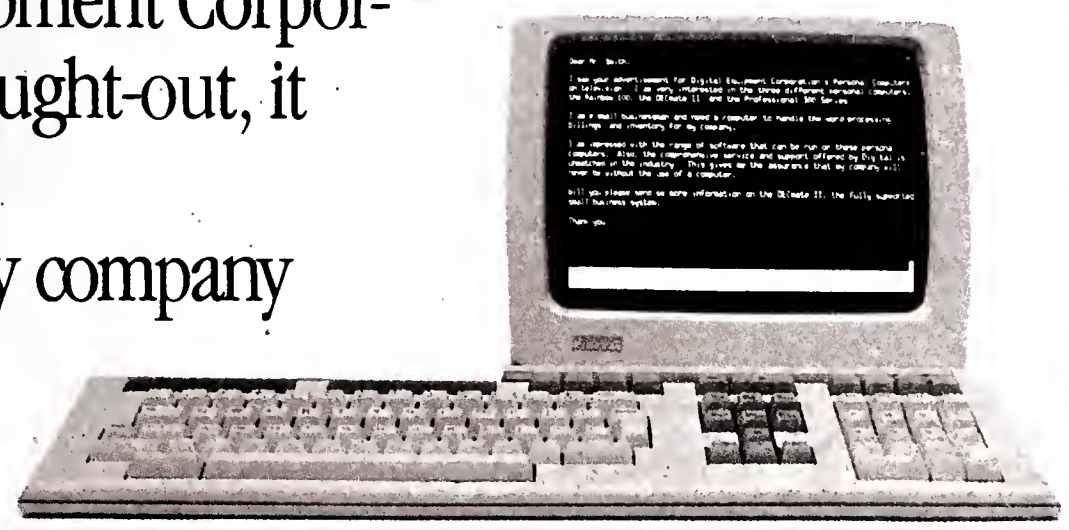


A COMPANY THAT CAN'T STAND BEHIND ITS PERSONAL COMPUTERS SHOULDN'T ASK YOU TO SIT IN FRONT OF ONE.

The plain truth about personal computers is this: most companies have a fairly shallow commitment to service.

Yet one company, Digital Equipment Corporation, has a service program so well thought-out, it overshadows all others in the industry.

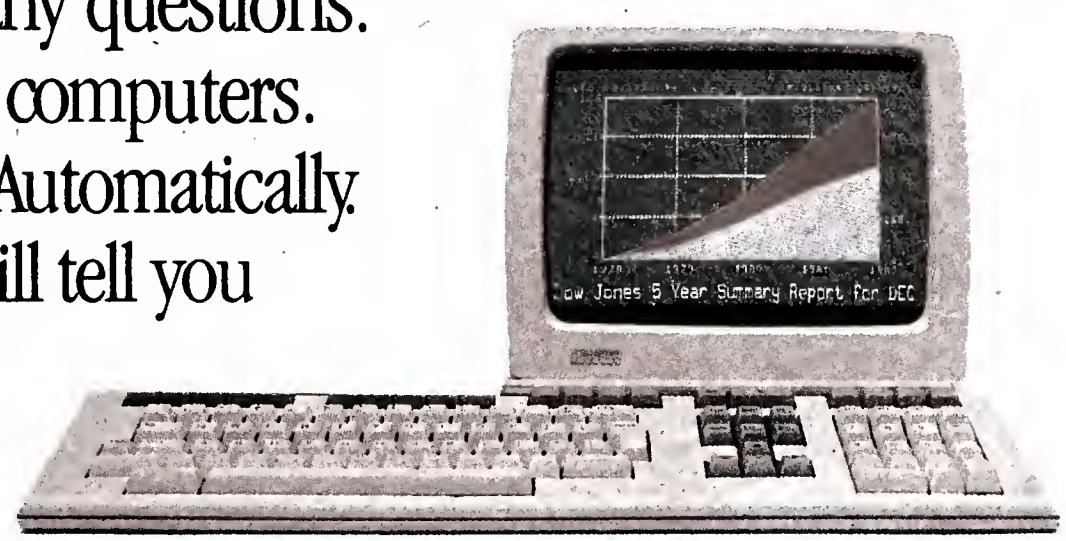
For example, Digital is the only company to offer a 90-day warranty on both hardware *and* software. We provide a toll-free hotline, manned by personal computer specialists, who will answer any questions. We even put service *inside* our personal computers.



DECmate II The fully supported office and small business system.

Turn one on and it tests itself. Automatically. If there's ever a problem, the computer will tell you *exactly* what it is.

Then, you've got three *convenient* ways to get it fixed. Call in one of Digital's service professionals; bring your personal computer into one of our 160 carry-in service centers; or order a replacement module yourself through our DECmailer service.



PROFESSIONAL 300 SERIES The minicomputer of personal computers.

We went to a lot of trouble to provide all this service. And the irony is, you probably won't need it.



RAINBOW 100 The low-cost, high-performance machine.

Because we also took the trouble to design our personal computers right in the first place.

For a brochure on our three personal computers, call 1-800-DIGITAL. Or write: Digital Equipment Corporation, 200 Baker Avenue, Concord, MA 01742.

digital

Professional 350, DECmate, and Rainbow 100 are trademarks of Digital Equipment Corporation.
© Digital Equipment Corporation 1983

EASTERN'S SPRINT.
WHEN IT DEFINITELY, UNQUESTIONABLY HAS TO BE THERE TODAY.



Most air-freight companies spend the day on the ground, racing to pick up small packages. So they can deliver them *overnight.* At Eastern Airlines, we spend that time in the air, delivering small packages to over 90 cities throughout the U.S. *The same day.* Just have your package at the Eastern airport counter at least 30 minutes before flight time. We'll put it on our next flight out and guarantee that it arrives the same day.* Or you don't pay. The guys who "fly-by-night" simply aren't up to that kind of service.

© 1983 Eastern Air Lines, Inc.

EASTERN

SPRINT

SAME-DAY PACKAGE SERVICE

Door-to-door delivery available for an additional charge. Call toll-free at 800-336-0336.

*Guaranteed same-day delivery requires that package be on a flight scheduled to arrive before midnight.

Hopper to Receive Award At AWC Meeting May 15

ANAHEIM, Calif. — The Association for Women in Computing (AWC) has announced that it will present its 1983 award for excellence, the Ada Augusta Lovelace Award, to Capt. Grace Murray Hopper, U.S. Naval Reserve, at the Association's second annual national conference on May 15. The daylong event, at the Sheraton Anaheim, will take place from 8:30 a.m. to 5 p.m.

Hopper, known as the originator of Cobol, is being recognized for her contributions "to the design and development of computer software, for her support of high standards in computer education, her contributions to the advancement of professionalism and her dedication to her country," an AWC spokeswoman said.

Hopper, who will not be there to receive the award in person, has been working with computers since 1943. The recipient of numerous awards, honors and honorary degrees, she was awarded the Data Processing Management Association's first Computer Science "Man" of the Year Award.

The AWC conference's keynote speaker will be Martha Loftus, a vice-president at Cray Research, Inc.

Addressing all levels of the computing profession, session topics at the conference will include women in top management, entrepreneurs, technologies in the forefront in the '80s and career mutations. There will be an opportunity for communication among women from various computer-related disciplines and from all parts of the country.

Sessions will cover software engineering, distributed systems and data bases, as well as a historical perspective on women in the computer industry and issues facing women in computing today.

Prior to the conference, AWC will hold its board of directors meeting on May 14 at the Sheraton Anaheim. The meeting will be followed by a chapters' workshop, scheduled not to conflict with conference sessions this year.

The conference is open to the public. Registration fees are $20 for AWC members and $30 for others. Registration takes place at the door.

More information on the conference is available from Betty Hein, program chairwoman, 5937N Armaga Springs, Rancho Palos Verdes, Calif. 90274.

Slotnick Gets IEEE Award

CHAMPAIGN, Ill. — Daniel L. Slotnick, professor of computer science at the University of Illinois, has received the Institute of Electrical and Electronics Engineers (IEEE) Computer Society's W. Wallace McDowell Award for his "pioneering contributions to centrally controlled parallel computers and for his achievement in creating the parallel computer, Illiac IV."

A graduate of Columbia University, Slotnick was the University of Illinois' director and principal investigator of the Illiac IV computer project. The high-speed computer was designed at the university, manufactured commercially and installed at the National Aeronautics and Space Administration's Ames Research Laboratory at Moffett Field, Calif.

In 1962, Slotnick was awarded the annual prize of the American Federation of Information Processing Societies, Inc. for his work on the Solomon computers at Westinghouse Electric Corp.

The McDowell award was established through a grant by IBM in honor of a retired IBM vice-president.

Have You Got the Picture?

Is one picture really worth a thousand words? Or — more importantly — is the picture worth the cost of generating it in terms of time savings and productivity gains?

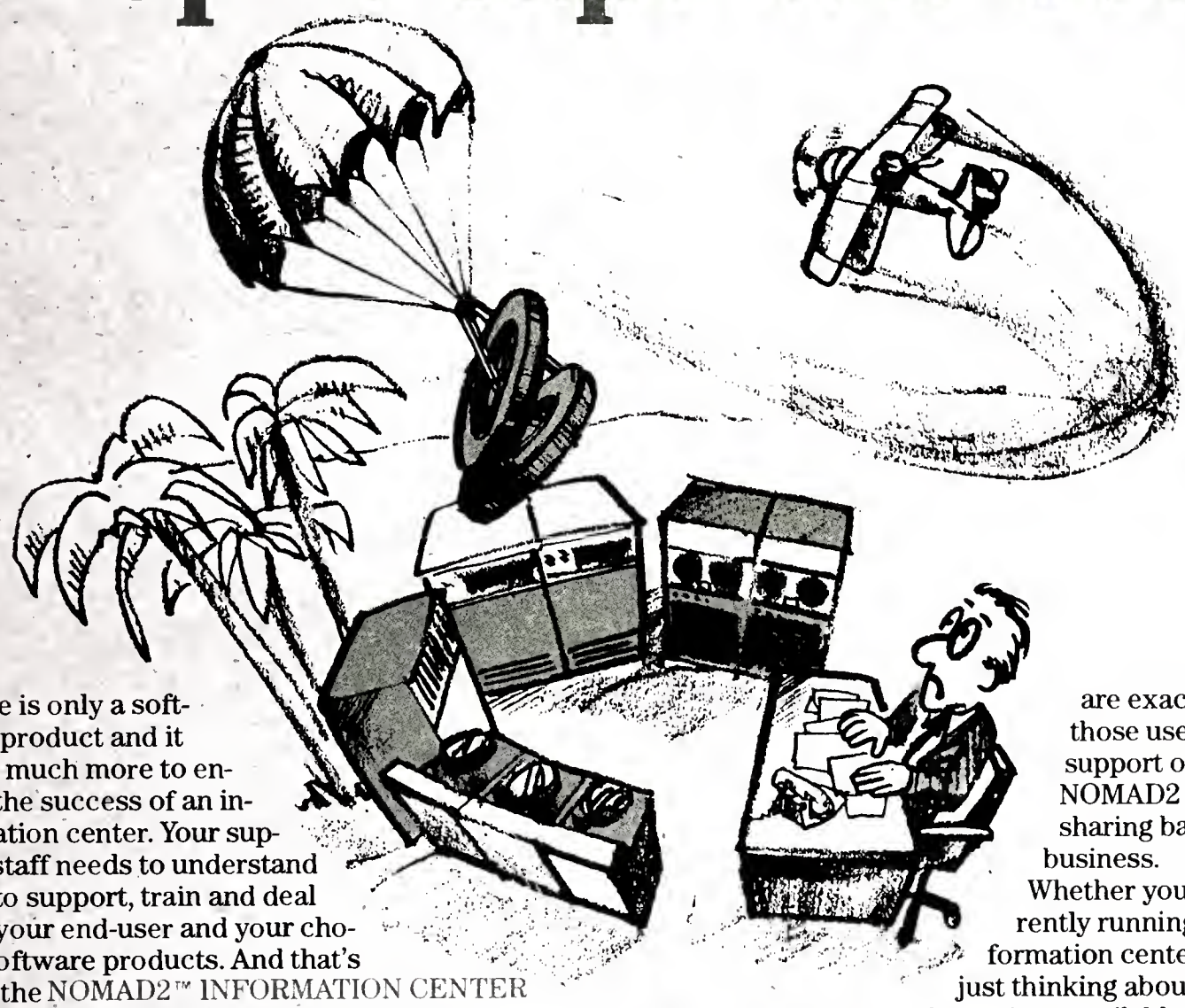
Computerworld's July 25 issue will contain a Special Report on graphics systems. The report will explore the latest technologies, techniques and applications in the computer graphics market, examining the range of applications from computer-aided design (CAD) to all the levels of business graphics.

In particular, CW wants to look at emerging trends in low-cost CAD and three-dimensional graphics, graphics terminals and software, the market for color printers and other output equipment and boardroom graphics.

CW welcomes graphics application stories, war sagas, tutorials and other testimonials related to the report. The manuscripts should be no longer than four to six double-spaced, typewritten pages. Preference will be given to articles with black-and-white photos or charts and graphs (originals, please).

The stories should be sent by June 10 to Jim Bartimo or Bill Laberis, both of whom can provide further details on the Special Report, at *Computerworld*, P.O. Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

We Don't Just Drop A Tape On You!



A tape is only a software product and it takes much more to ensure the success of an information center. Your support staff needs to understand how to support, train and deal with your end-user and your chosen software products. And that's what the NOMAD2™ INFORMATION CENTER is all about. The NOMAD2 INFORMATION CENTER consists of: NOMAD2, the most powerful 4th generation language/DBMS currently available; support staff training, product education, documentation and product support; and of greatest value, our 16 years of experience in delivering end-user computing.

NOMAD2 is widely recognized in the industry as the premier end-user oriented software product. Its report writer is unsurpassed and its graphic capabilities, relational properties and broad spectrum of built-in functions allow it to fully respond to end-user needs, no matter what those needs are. The in-depth training and support materials are exactly those used to support our NOMAD2 time-sharing based business.

Whether you're currently running an information center, or just thinking about setting one up, examine the options available to you and then talk to us. And if someone tries to drop a tape on you, ask them what they know about delivering and supporting end-user computing.

For further information call Charles Graham at (203) 762-2511, or write to:

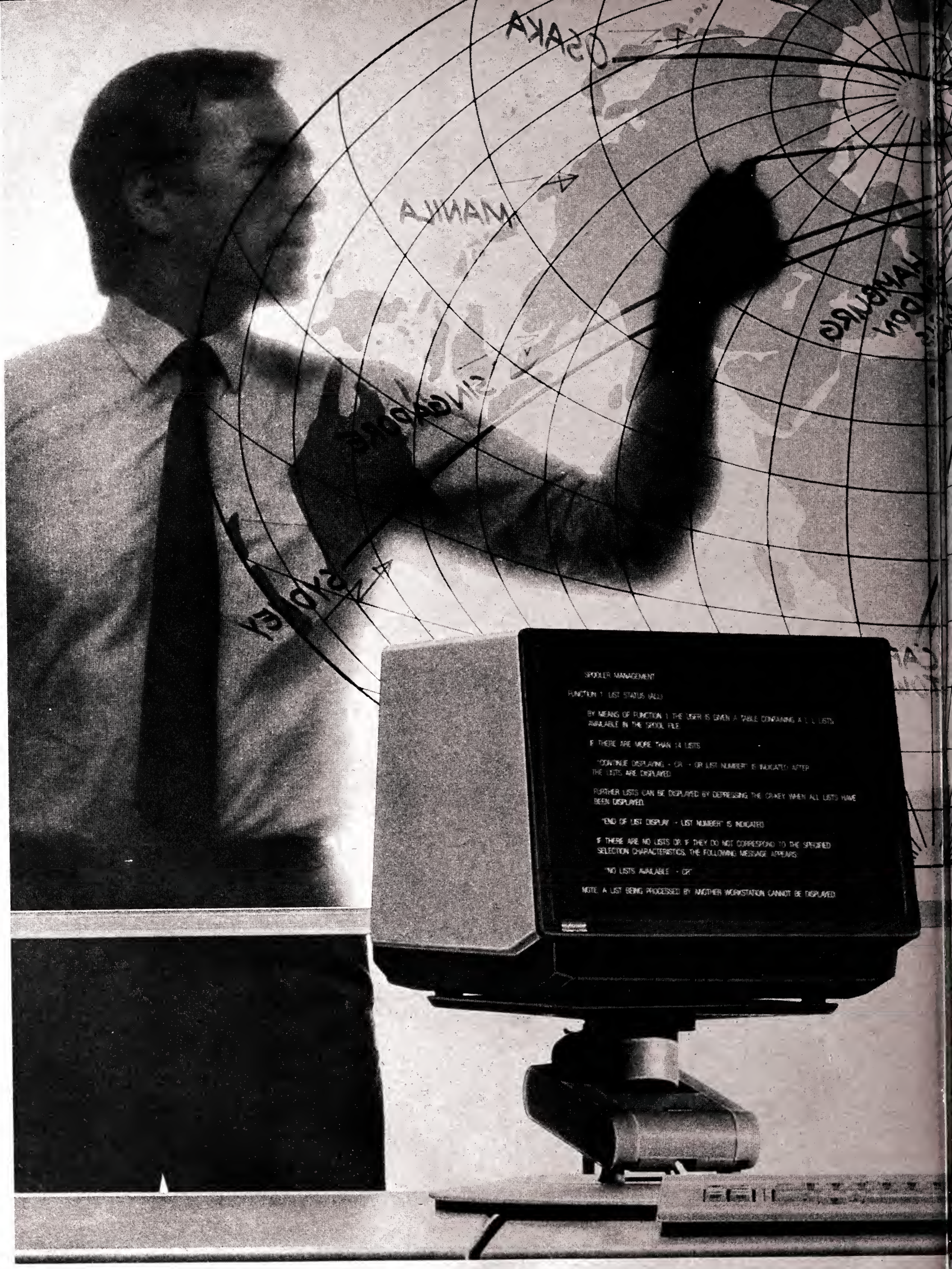
N2IC, National CSS,
187 Danbury Road,
Wilton, CT 06897

NOMAD2 *Information Center*

Experience the difference

National CSS

a company of The Dun & Bradstreet Corporation



Whether you need to keep information flowing across the hall or around the world, here's an important consideration. Thousands of the world's most successful companies have already selected Nixdorf as the best computer company for the job.

Nixdorf makes it simple to tie all your offices together into one efficient network. And, we have the experience, products and support capability to keep information flowing in banking, insurance, government, retailing, transportation and other specific industries.

International businesses demand software systems that are at home anywhere. And only Nixdorf can offer COMET International, a total business information system with over 10,000 installations in 30 countries. COMET International is a valuable contributor because it has capa-

How far would you like your data processing distributed?



bilities in seven foreign languages and 19 currencies, and also meets the demands of local accounting principles and exchange rates.

For 31 years, Nixdorf has been providing solutions for the information processing needs of all kinds of businesses. And today, we're a successful international company with 16,000 people and over 110,000 computer systems installed around the world.

So no matter how far you want to go, remember Nixdorf. We're making it a small world for some of the world's largest companies.

Nixdorf Computer Corporation,
300 Third Avenue, Waltham, MA 02154

NIXDORF
COMPUTER

Users Group Lauds TI Management For Responsiveness, Willingness to Listen

By Susan Blakeney
CW Staff

NEW ORLEANS — Why did Larry Briggs volunteer to run for office at the very first meeting of TI-MIX, the national Texas Instruments, Inc. users group, that he attended?

"I thought I knew it all . . . and I saw the potential for bringing nontechnical perspective to TI-MIX. I thought it would be valuable to have a nontechnical person on the committee," he said.



Mike Roginsky

Since then, Briggs, who is director of sales and marketing at Timberline Systems, Inc. in Beaverton, Ore., as well as vice-chairman of TI-MIX, has somewhat revised both his opinion of the group and himself:

"I've learned a lot from TI-MIX. The TI management has a great attitude toward the users group. They are very responsive to specific suggestions . . . their willingness to listen and act has been terrific," he said.

Briggs wants to incorporate this formula into his own company's users group. Timberline Systems, said to be TI's largest OEM, markets a range of minicomputer software systems for construction management, property management and membership organization management, Briggs explained. He wants to apply TI's "TI-MIX-is-important-to-us" philosophy to Timberline.

"I think this [is] very smart of TI. Otherwise, these users group meetings could become a real [gripe] group centering on the negative rather than looking at the positive," Briggs went on to say.

He spoke hedgingly of the vendor's shift into the micro arena. He believes TI is in a state of transition now, with the heavy emphasis going toward personal computers rather than its users. But Briggs was quick to add, "nothing is perfect."

Room for Improvement

Mike Roginsky, who designs flight test equipment for Lockheed Georgia Co., and who has been a TI-MIX member for six years, also believes there's room for improvement in TI-MIX.

Unlike Briggs, he is a technical person — a self-described "chip man" in fact — and feels there is a real need for the "chip man to have some say-so here" in TI-MIX.

"We have lots of problems," Roginsky confided. "TI's getting very turnkey-oriented. They're not catering to the microprocessor designer," as much as he would like.

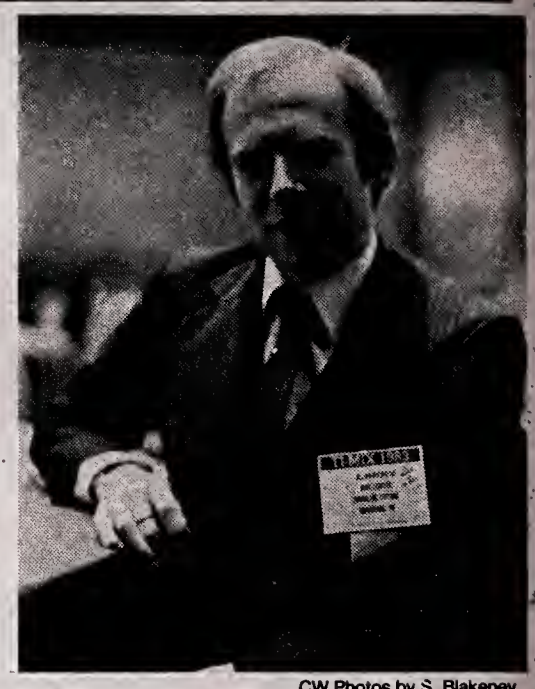
Thus Roginsky chaired a session at the recent national TI-MIX meeting here on "Hardware Concepts," with the objective of "getting the user's point of view on interface solutions."

Roginsky said his company has very special needs. "We take their [TI's] chips and build our own data systems for airborne use . . . custom-made systems. We depend on their development; that's why it's important for me to be here."

He believes TI should steer itself more in line with his needs.

"They are not providing me with the military qualifications on the chip that I need," he said.

"But the majority of this users group is business-oriented and OEM-oriented. We're just a small voice. We sound off the best we can — and hope they will hear," he said.



CW Photos by S. Blakeney

Larry Briggs

FOCUS
on your INFORMATION CENTER
ENSURE END USER SUCCESS BY
"USING FOCUS"*
A CAI COURSE WRITTEN BY GARY DeWARD BROWN
AUTHOR OF "USING SAS"

CRWTH COMPUTER COURSEWARES
613 WILSHIRE BLVD., SUITE 200
SANTA MONICA, CA 90401
(213) 391-6788 1-800-282-2372

Yes, send me information on USING FOCUS
COMPANY_____
NAME_____TITLE_____
ADDRESS_____
PHONE_____
* FOCUS is a copyrighted product of Information Builders Inc.

Reluctance to Use Local Nets Still Evident, Says IDC Exec

By Jim Bartimo
CW Staff

TARPON SPRINGS, Fla. — "Users still appear reluctant to leap over the edge of full-blown local-area network implementation," Will Zachmann, vice-president of technology assessment for International Data Corp. (IDC), said here recently. "The number of campuswide installed systems is still very small."

Zachmann reviewed the current local-area network picture and its future at IDC's 14th Spring Executive Conference in a session titled "Local-Area Network Implementation in the Office."

A user has to decide what kind of transmission media to use (twisted pair, coaxial cable or fiber optics), what kind of access method (token passing, time division multiplexed access or carrier sense multiple access with collision detect [CSMA/CD]) and what kind of topology (star, ring or bus).

"It's a tough set of choices and there is no absolutely clear answer," Zachmann said. "But on the other hand, we are seeing installations picking up. It will be a year or two before most users have a local-area network."

Even local-area networks installed today are what Zachmann called "work-area networks" that work with only six or eight connections and serve only a department rather than the entire company.

But local-area networks are inevitable because "without the basic physical level of connectivity that a local-area network can provide, there can be no real integration of electronic office systems," Zachmann said.

Although the ultimate decision will be made in the marketplace, Zachmann predicted which network choices are likely to survive in the next few years.

For work-area networks, Xerox Corp.'s Ethernet and IBM's not-yet-released token ring network will be widely used.

For true local-area networks, users can expect to see much of CATV broadband systems with both CSMA/CD and token bus access methods.

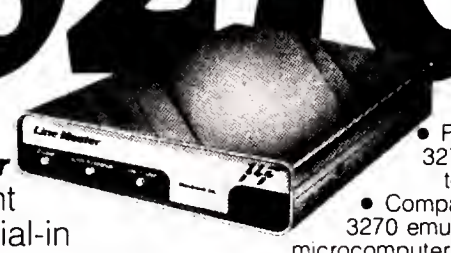
Another reason there are so few networks installed is that various departments have different ideas about the definition of a local-area network. "Business people are not familiar enough with the technology," he said. "Data processing looks at it like a traditional form of data communicatons, and the telecommunications department wants to see the PBX [private branch exchange] run the network."

While many industry experts claim that a PBX telephone system can be best used to implement a local-area network over existing phone lines, Zachmann called this "largely a phony issue." He predicted that, as complementary technologies, a PBX and a local-area network will work together and the distinction between them will eventually blur.

No one is exactly sure how local-area networks will be used, Zachmann said, because it is common to apply too many old ideas to a new technology.

"Local-area network technology does not work the way traditional data communications does," he said. "It will be used that way for a while, but it will be different."

introducing
Dial-Up 3270

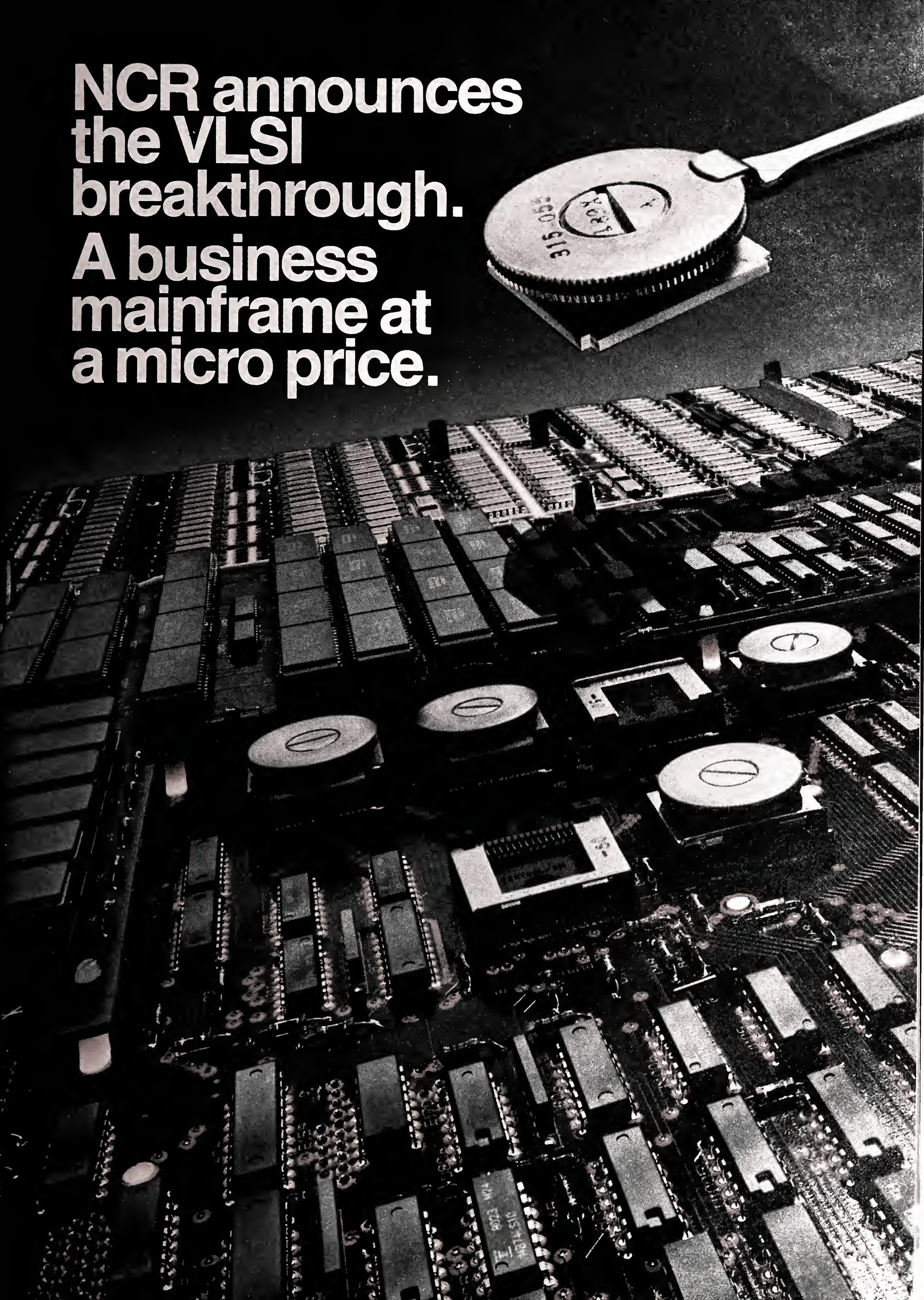


LineMaster
An intelligent device for dial-in access to your mainframe 3270 line.
LineMaster is a communications watchdog which keeps a line in service until a user dials in.

• For any remote 3271/4/6 line, up to 19.2K baud. • Compatible with any 3270 emulator including microcomputers. • Connects between modem and mainframe. • Installs in minutes.
$639.

MicroFrame, Inc.
205 Livingston Avenue
New Brunswick, NJ 08901
(201) 828-4499

NCR announces the VLSI breakthrough. A business mainframe at a micro price.



NCR 9300

The first full 32-bit VLSI Mainframe for business.

Ten ways better than what you're using now.

From hardware to software, the exciting new NCR 9300 is a technological marvel. It propels the "state- of-the-art" a quantum leap forward. The NCR 9300 is the first full 32-bit — internal and external — mainframe available for business applications. It gives you the power of an IBM System 38 at the price of a System 34.

NCR's proprietary VLSI (Very Large Scale Integration) technology makes it all possible. VLSI is the catalyst for increased reliability, reduced size and weight, powerful software, quick and easy servicing and dramatically improved price/performance.

1. New state-of-the-art customized 32-bit VLSI chip set
Four VLSI chips — a Central Processor Chip (CPC), an Address Translation Chip (ATC) and two System Interface Chips (SIC) — are the heart of the 9300. Together, these chips share the 9300's workload so that you realize the power and performance of three types of microprocessors instead of just one.

2. Ten boards of electronics reduced to one reliable VLSI chip
Using Very Large Scale Integration, NCR now puts the electronics of ten 11"x14" printed circuit boards on the Central Processor Chip no larger than a dime. Not only does VLSI save space, it eliminates almost all of the vulnerable electrical connections where system failures usually occur.

3. Guarantee your data integrity with memory scrubbing
NCR's newly patented memory scrubbing method cleans the 9300's four megabytes of main processor memory every 16 seconds! It does this by correcting any transient single-bit errors — effectively eliminating catastrophic double-bit memory errors. All of this is done automatically by the Address Translation Chip with no central processor overhead.

4. Mainframe power in a two cubic foot, fifty-pound box
With the 9300, you can put full 32-bit VLSI power almost anywhere. The 9300 weighs only fifty pounds and measures a scant 7.5"x17.6"x25.8". The processor requires no special air conditioning or humidity control. In office or computer room, put the 9300 processor wherever it's convenient for you — even on the wall.

5. Uses a standard 120-volt outlet whlie cutting power consumption 90%
The 9300 uses only 0.4 KVA compared with the 4 KVA requirements of comparable mainframes. Plus, there is no need for heavy-duty wiring. The 9300 runs on readily accessible voltage and conventional wiring.

6. New ITX operating system links high and low order processing
The new Interactive Transaction Executive multiprogramming operating system extends the 9300's communications capabilities beyond NCR's multi-industry expertise in interactive transaction processing. With ITX, the 9300 provides the unprecedented link in interfacing multiple CRTs, industrial terminals, retail terminals and financial terminals, local and remote. The 9300 extends communications to other NCR processors through use of remote





batch or DDP, and to non-NCR processors in SNA environments.

The Terminal Application Processing System (TAPS*) takes the complexity out of transaction processing. It works with ITX to provide efficient and consistent handling of transactions. It provides standardized coding to simplify development of sign-on, sign-off and security procedures, the design and sequencing of screens and the editing of data formats. It takes transaction processing out of the application programs.

In addition, ITX offers automatic load leveling, batch queuing and remote support. And you have COBOL and BASIC for application programming, with more languages to come. Of course, ITX adheres to NCR's philosophy of easy and fully supported system migration. For I-series users that means continuing compatibility with current interactive operating systems.

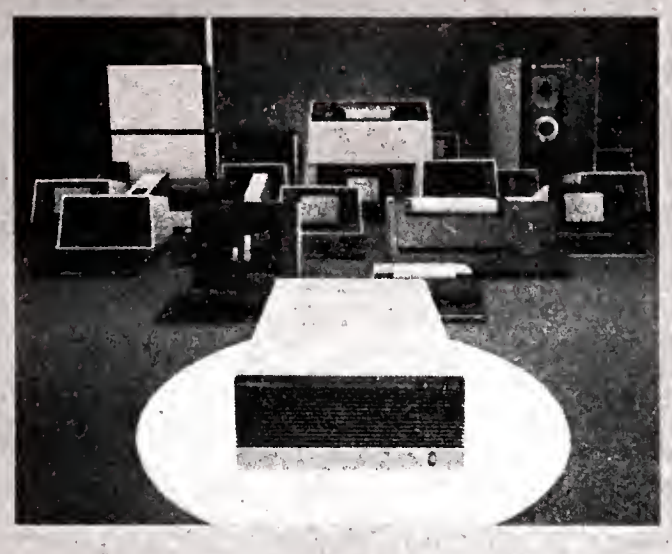
7. Choose your computer environment — Host, DDP, SNA

The 9300 has the unsurpassed ability to work for you in a host environment, in a peer-to-peer Distributed Data Processing environment and in an SNA network. Whatever your choice, you get the communications support you need — SDLC, X.25, BSC, DLC, TTY and ISO-Async. And the 9300 integrated communications allow you to connect up to 42 lines. In a DDP environment, the 9300 supports message passing between peers, including NCR's IRX, IMOS, and VRX. In an SNA network, the 9300 provides you with the vital link between high and low order processing.

8. SOLON — a revolutionary way of creating programs without programming.

Now, almost anyone can create computer programs by answering simple questions. NCR's new application development system, SOLON, helps the business professional or EDP expert to create application programs in a fraction of the time necessary for traditional methods. Think of it! Cut your EDP backlog from years to weeks — just as fast as you'd like.

*TAPS is a product of Informatics General Corporation



9. Powerful software tools increase productivity

Supportive software for the 9300 increases programmer productivity. You get transaction support capabilities, a query language, a report generator and a word processing system. In addition, there are a number of other software development/productivity tools available for your specific requirements.

10. The strengths of three data base methods in one

NCR's data base management system gives you the strengths of the hierarchical, network and relational models all in one system. It is a relational environment which complies with CODASYL specifications. So you are assured of data integrity, elimination of data redundancy, data restructuring with minimal program impact, and data access through multiple paths. And all enhanced by our query language and other optimization tools.

NCR 9300, the most advanced technology you can buy

First in the new world of business mainframes, the exciting new 9300 is at least ten ways better than what you are using now. To find out exactly what the 9300 can do for you, call (800) 543-8130 [in Ohio, (800) 762-6517] now for a free copy of the brochure, "NCR 9300. . .A New Generation." Or write NCR Corporation, Dept. L, Box 606 , Dayton, Ohio 45401.

NCR
99 Years Experience in Business Systems

See the amazing 32-bit 9300, Tower 1632, the 8600 family, and the new personal computer from NCR, DECISION MATE V, at the NCC booth number S-5028.

Calendar

Week of May 8

May 11-12, Danvers, Mass. — **Electronic Corporate Publishing.** Contact: Interconsult, New Information Technologies, 21 Notre Dame Ave., Cambridge, Mass. 02140.

May 11-13, Los Angeles — **Fourth Annual Computer Law Institute.** Contact: University of Southern California, Law Center, Room 105, University Park, Los Angeles, Calif. 90089.

May 11-13, Washington, D.C. — **Software Quality Assurance.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

Week of May 15

May 16-17, San Francisco — **International Communications: Products, Technology and Regulation.** Contact: Business Communications Review Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.

May 16-17, New York — **Fundamentals of Data Processing and Telecommunications.** Contact: National Institute for Management Research Seminars, P.O. Box 3727, Santa Monica, Calif. 90403.

May 16-18, Denver — **Micro and Home Computers: Technology and Applications.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

May 16-18, Washington, D.C. — **Structured Analysis and Design.** Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

May 17, New York — **Computer-Assisted Manual Writing.** Contact: Promptdoc, Inc., Colorado Ave., Colorado Springs, Colo. 80905.

May 17-19, Minneapolis — **Data Communications Network Design and Optimization.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

May 18-19, Washington, D.C. — **Telephone Bypass Opportunities and Local Access.** Contact: Telestrategies, Inc., Suite 102, 6842 Elm St., McLean, Va. 22101.

May 18-20, New York — **Word Processing VII.** Contact: National Institute for Management Research Seminars, P.O. Box 3727, Santa Monica, Calif. 90403.

May 18-20, New York — **Artificial Intelligence Applications for Business.** Contact: New York University Symposium Series, c/o Computer Applications and Information Systems Department, 700 Merrill Hall, 90 Trinity Place, New York, N.Y. 10006.

May 18-20, Palo Alto, Calif. — **Man/Machine Interface.** Contact: Continuing Education Institute, Oliver's Carriage House, 5410 Leaf Treader Way, Columbia, Md. 21044.

May 19, Atlanta — **Computer-Assisted Manual Writing.** Contact: Promptdoc, Inc., Colorado Ave., Colorado Springs, Colo. 80905.

May 19-20, San Francisco — **Local-Area Networks: Equipment and Systems.** Contact: Architecture Technology Corp., P.O. Box 24344, Minneapolis, Minn. 55424.

May 19-20, Boston — **How to Evaluate and Select Computer Software.** Contact: Battelle Memorial Institute, Seminars and Studies Program, 4000 N.E. 41st. St., P.O. Box C-5395, Seattle, Wash. 98105.

May 19-20, New York — **Unix: Concepts, Functions, Applications.** Contact: American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

Week of May 22

May 23-25, San Francisco — **DP Disaster Recovery Seminar.** Contact: EDP Security, 181 West St., Waltham, Mass. 02154.

May 23-25, Washington, D.C. — **Practical Data Security: Implementation and Management.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

May 23-25, New York — **Structured Testing.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

May 23-27, New York — **AOS/VS Operator Training.** Contact: Data General Corporate Educational Services, 4400 Computer Drive, Westboro, Mass. 01580.

May 23-27, Cambridge, Mass. — **Digital Signal Processing: Hardware, Software and Systems Design.** Contact: Institute for Advanced Professional Studies, 55 Wheeler St.,



LOOKING FOR A STRAIGHT APPROACH TO LOCAL AREA NETWORKS? ASK US.

Sure, there are lots of people talking about local area network solutions to data communications problems. Both broadband and baseband. But talk is cheap. LAN's aren't. Unless they're approached in the right way.

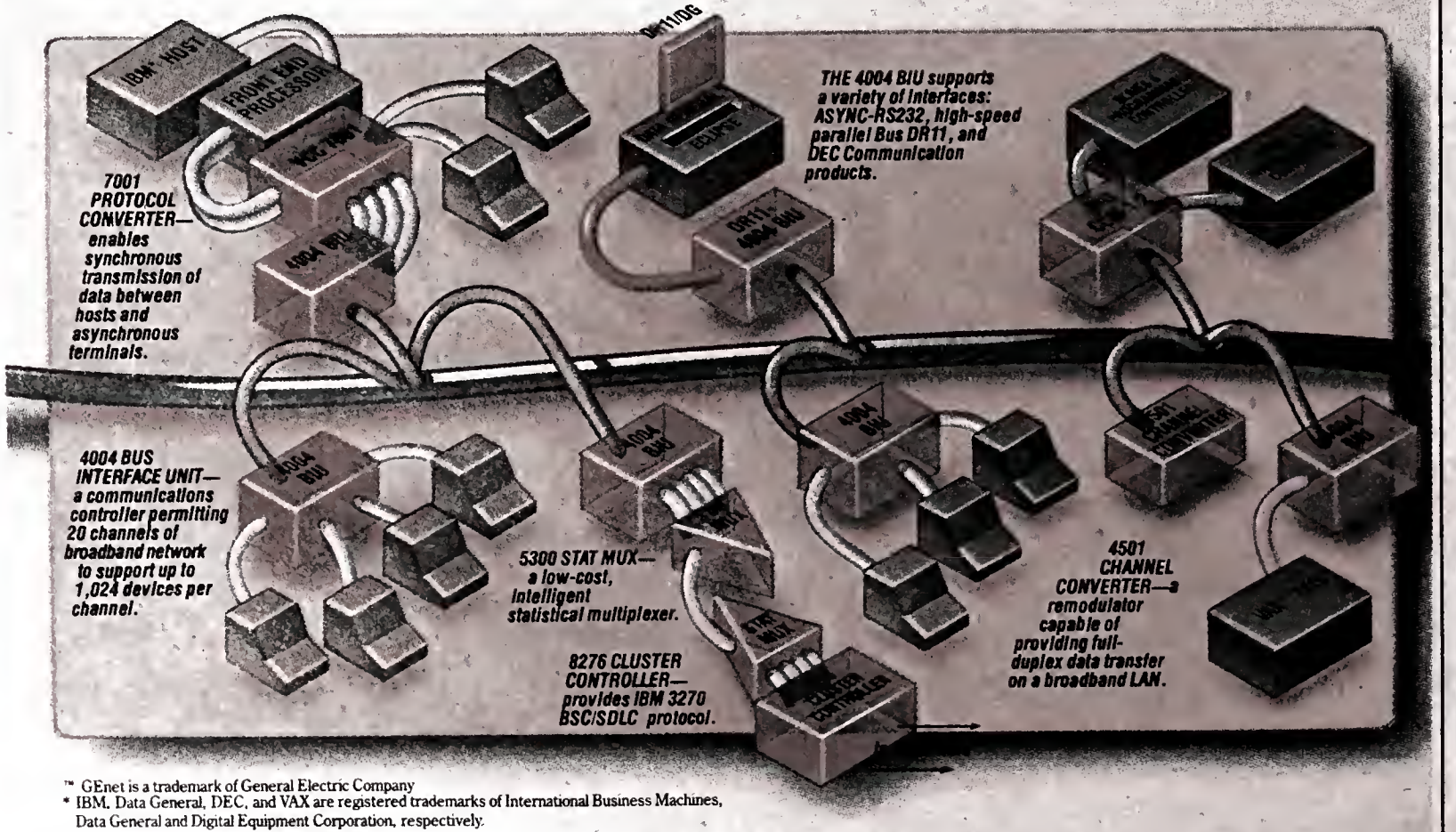
OUR WAY.

At G.E. Intersil Systems, we've been giving more than lip service to data communications problems. We've been designing and manufacturing a broad spectrum of communications products, for a wide range of applications. Statistical multiplexers. Protocol converters. LAN Bus interface units. And DEC* compatible communication products. All part of our recently introduced GEnet™ broadband network. So you can build your own local area network, the way *you* want it. Utilizing any existing CATV cable. Or installing an entire network to your specific communications requirements. With all the components coming from a single source. Us.

Just having the hardware isn't the entire answer, either. That's why we've added a set of software programs, each one written to satisfy a particular communications requirement. On top of that, we have the installation, service and maintenance support that only General Electric can offer. Nationwide G.E. service locations make sure of that.

Isn't it time you got some straight talk on local area networks? Rather than more lip service. A phone call is all it takes. Just dial (408) 743-4300 and ask for Communications Products. Or write us for more information.





™ GEnet is a trademark of General Electric Company
* IBM, Data General, DEC, and VAX are registered trademarks of International Business Machines, Data General and Digital Equipment Corporation, respectively.

Intersil Systems

1275 Hammerwood Avenue • Sunnyvale, CA 94086 • (408) 743-4300

Calendar

Cambridge, Mass. 02138.

May 23-27, Washington, D.C. — **Computer Performance Measurement and Capacity Planning.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

May 24, New York — **Personal Computers in the Business Environment.** Contact: Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138.

May 24-26, Los Angeles — **Managing Programs and Projects.** Contact: Continuing Education Institute, Oliver's Carriage House, 5410 Leaf Treader Way, Columbia, Md. 21044.

May 24-26, Houston — **SAS Basics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

May 24-26, Palo Alto, Calif. — **Microprocessor Background for Management Personnel.** Contact: University Extension, University of California at Berkeley, 2223 Fulton St., Berkeley, Calif. 94720.

May 24-27, San Francisco — **Data Communications: Components, Systems and Networks.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

May 24-27, San Diego — **Designing VLSI.** Contact: Integrated Computer Systems, 3304 Pico Blvd., P.O. Box 5339, Santa Monica, Calif. 90405.

May 25-26, Portland, Ore. — **Information Processing '83.** Contact: Biggs McGowan Public Relations, 2187 S.W. Main St., Portland, Ore. 97205.

May 25-27, Boulder, Colo. — **Seminar on MVS/XA.** Contact: Trailbridge Associates, 14300 W. 50th, Golden, Colo. 80401.

May 25-27, Los Angeles — **Data Communications: An Introduction to Concepts and Systems.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

May 25-27, Boston — **The Personal Computer: Strategies for Managing.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

May 25-27, New York — **Local-Area Networks: Selection and Guidelines.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

May 25-27, Chicago — **Data Communications for Microcomputers.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

May 26, New York — **Long-Range and Strategic Planning for DP.** Contact: Management International, Seminar Data Center, Box 1510, FDR Station, New York, N.Y. 10150.

May 26-27, Boston — **Fundamentals of Data Processing for the Non-Data Processing Executive.** Contact: The Wharton School, University of Pennsylvania, Executive Education, Dietrich Hall, Locust Walk, Philadelphia, Pa. 19104.

May 26-27, New York — **Workshop for the New Security Officer.** Contact: Computer Security Institute, 43 Boston Post Road, Northborough, Mass. 01521.

May 26-27, Cary, N.C. — **SAS Color Graphics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

May 27, Toronto — **Productivity and Performance Planning for DP.** Contact: Management International, Seminar Data Center, Box 1510, FDR Station, New York, N.Y. 10150.

Week of May 29

May 30, Columbus, Ohio — **DOS/VSE Job Management.** Contact: Education Coordinator, Goal Systems International, Inc., The Goal Systems Building, 545 N. High St., Columbus, Ohio 43214.

May 30-June 1, Toronto — **CAD/CAM & Robotics Exposition.** Contact: Society of Manufacturing Engineers, Public Relations Department, 1 SME Drive, P.O. Box 930, Dearborn, Mich. 48128.

May 31-June 1, San Francisco — **Mumps Development Committee Meeting.** Contact: Thomas C. Salander, Computing Facility, New York State College of Veterinary Medicine, Cornell University, Ithaca, N.Y. 14853.

May 31-June 2, Boston — **Project Management and Control.** Contact: QED Information Sciences, Inc., QED Plaza, P.O. Box 181, Wellesley, Mass. 02181.

May 31-June 3, Dallas — **Structured Requirements Definition.** Contact: Gayle Giescke, Ken Orr & Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

May 31-June 4, San Francisco — **12th Annual Mumps Users' Group Meeting.** Contact: Mumps Users' Group, P.O. Box 37247, Washington, D.C. 20013.

$225 "TAP" LINE MONITOR and DIGITAL BRIDGE use with any monitor mode CRT

Data Com TWO NETWORK HELPERS

MODEM SHARING DEVICE 4 Ports With Diagnostics "DeCAT" $195

Computer Peripheral Systems, Inc.
Box 98282
Atlanta, Ga. 30359 (404) 292-9565

TECHNOLOGICAL BREAKTHROUGH IN BUSINESS COMPUTERS!

CADO introduces world's first tri-level, 16-bit supermicro... all the power you need to support up to 64 users at incredible speeds!

New CADO TIGER family has up to 14 processors in a three-level architecture that share the work load and give you the power and response to do *all* your processing jobs at the same time.



First, there's the Transaction Processor. The workhorse of the system, it interfaces with user terminals, printers, modems and other peripheral devices. Alone, each Transaction Processor has more computing capacity than many complete computer systems.

Secondly, the Intranet Processor takes on the long processing jobs to free up the Transaction Processor.

Finally, the Control BiProcessor interfaces to the disk-and-tape-storage devices to speed up disk access and memory-to-memory transfers.



CADO TIGER ATS 32

Three levels of processors working *together* give you more power and faster response than any other micro—or mini—computer can match.

CADO makes it easy to grow with your TIGER, too. You start with a few peripherals and 15 million bytes of storage. And you can end up with 64 devices and 1.1 billion bytes of data storage!

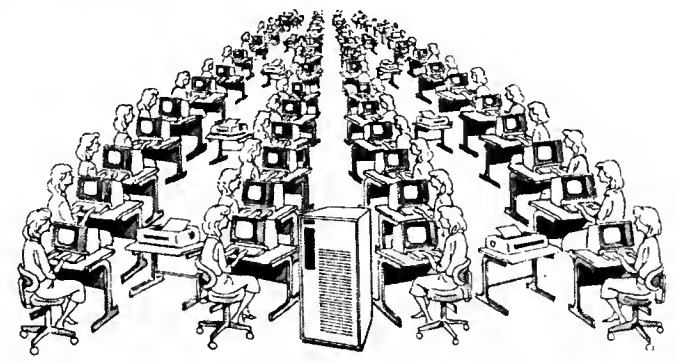
Whether it's your first or next system, chances are this CADO TIGER will be all the computer your business will ever need.

And you'll be amazed at how little all this power costs. No more than lesser micros. And much, much less than minicomputers.



Now part of the $3.9 billion Contel organization, CADO has been a leader in business systems technology for seven years and is sold and serviced by over 180 distributors worldwide.

Your nearby CADO Distributor is a data processing professional. He sells *business* computers. He has software packages proven in many businesses like yours or will design custom software just for you.



So before you choose your next business computer, call your nearby CADO Distributor or send in the coupon below. For the name of your CADO Distributor or more information, call us at **800-556-1234, ext. 128;** in California, **800-441-2345, ext. 128.** Ask about the CADO TIGER—the technological breakthrough that just made all other business computers obsolete.

CW-5

CADO
A Contel Company

2055 West 190th Street • P.O. Box 3759 • Torrance, CA 90510
(213) 323-8170 • Telex: 66-4711 CADO TRNC

Please rush me more information.

NAME_____
TITLE_____
COMPANY_____
ADDRESS_____
CITY_____ STATE_____ ZIP_____
TELEPHONE_____

EDITORIAL

Tackling the Factory

If attendance at the Info Manufacturing '83/Hi-Tech '83 conference held recently in Chicago is any indication, DP professionals may soon be called upon to tackle one of the least computerized segments of American industry — the factory.

Statistics from the show demonstrate the magnitude of this new interest: The three-day attendance of 9,000 exceeded the 1982 figure by 50%. Many of the sessions were filled to overflowing. And vendors polled by *Computerworld* on the exhibit floor generally concurred that attendance exceeded their expectations [CW, May 2].

Vendors also commented that they were hearing more informed questions from the users who, for the first time in two years, seemed to have money in hand.

Furthermore, an informal survey of attendees found that most were at their first Info Manufacturing conference and nearly all were planning to do some shop floor computerization within a year.

All this points to yet another path in the labyrinth of potential applications DP will explore in coming years. Many experts say that since the U.S. cannot compete with other countries in the wage arena, we need to develop further the advanced control systems that other countries are so eagerly trying to emulate. The U.S. has been surpassed in its ability to achieve maximum productivity from human beings, they say, but our ability to plan is second to none.

The potential of technologies like material requirements planning (MRP), shop floor control, data collection and bar coding for material and inventory management is evident from the degree of user interest they inspired. One visitor at Info Manufacturing '83 commented that his recently installed MRP system had saved several million dollars, while another said MRP had helped his company turn over its entire inventory one more time each year.

Vendors are turning an ear to the expanding marketplace on the factory floor. The crowd at this year's show included a half-dozen major software vendors and nearly every mainframe company. IBM has ordered floor space for next year's Info Manufacturing that is nearly double the size it took this year, according to Terry Brooks, show manager. In fact, the total exhibit space reserved for the 1984 show already exceeds that of this year.

As manufacturing becomes aware of attractive new computer applications in the factory, DP managers will be called upon to don yet another hat. The vision of more work for an already overloaded staff may not bring a smile to the DP executive's face, but it presents another major opportunity to bring computing resources to bear in a manner that will certainly benefit the business.



'Be My Guest, Doc, If You Can Find Any Place Left to Cut.'

LETTERS

Bank Data Bases

I am compelled to reply to Stephen E. Seadler's stimulating letter to the editor [CW, March 21] about my In Depth article "Data Is Money" [CW, Feb. 14].

First, much of Seadler's letter is devoted to an explanation, in mathematical terms, of how the money created by commercial banks by means of lending ("bank money") is limited to M_R/r, where M_R is money kept in reserve by banks and r is the reserve ratio, which is the fraction (close to one-fifth) of a commercial bank's deposits that are kept in cash and deposits with the Federal Reserve.

The explanation that I gave in my article is equivalent to Seadler's, although I used the accepted device of a monopoly bank to avoid mathematics and keep the technical terms to a minimum.

Second, Seadler criticizes me for not making clear that the money supply ("current money") is made up of bank money and currency. The core of my article focused on bank money and was a deliberate simplification for the benefit of readers.

Third, the fundamental question addressed in my article is where this bank money is stored nowadays. Seadler believes the money to be stored in bank basements, to judge from his statement "If anybody does want his 'money' — currency money — he'll find it in the basement — not on disk!"

However, should everybody want their money at once, they will find a lot less than the fraction r in bank vaults.

Admittedly, given time loans can be called in and cash procured, but that shows that bank money is not stored in bank vaults.

My argument that bank money is actually stored on disk in bank data bases is partly based on observation of the way in which bank money is used.

For example, it is in theory feasible to steal X amount of dollars from a bank by a debit of one field in a bank data base by X amount of dollars, a credit of another field by X amount of dollars and, finally, an issue of checks totaling X amount of dollars for purchase of goods. Physically, such a sequence of transactions involves only data base updates and the flow of goods.

Naturally, I agree with Seadler that there has to be a store of value (assets) in the bank to back the bank money (liabilities of the bank). However, most of this store of value cannot be cash; there is nowhere near enough cash in the bank, and the backing must ultimately be the collateral of the bank's borrowers.

Fundamentally, bank money is a severely limited quantity of IOUs, that is, contracts, issued by banks and backed by collateral. Before the use of computers, IOUs and contracts, in general, always resided on paper. However, there is nothing to prevent IOUs and contracts from residing on magnetic media, provided the parties to the contracts are satisfied with respect to their safety from interference.

When we view money as contracts we see that it can reside on any information storage medium, including computer disks.

I believe this to be a useful and even conservative conclusion, for it should induce those working in bank data base environments to pay particular attention to the security and integrity of bank data bases. On this last point at least, Seadler and I are in agreement.

James Bradley
Associate Professor
Computer Science Department
University of Calgary
Alberta, Canada

DATA PAST

Five Years Ago
May 8, 1978

NEW YORK — A hardware vendor joined the growing list of IBM 370-compatible, medium-scale systems suppliers when National Semiconductor Corp. announced its first general-purpose "minicomputer" to be sold directly to end users as well as to OEMs.

The System 400 came with assorted adapters that permitted interfacing to IBM I/O devices and to five classes of minicomputer peripherals.

Ten Years Ago
May 9, 1973

TULSA, Okla. — Computer users become wedded to their suppliers because of the huge programming investment and the incompatibility problems of changing from one vendor to another, a user witness told the court here as Telex neared the end of its presentation in its $1.2 billion antitrust action against IBM.

In other actions in the case, Telex witnesses relied almost solely on internal IBM documents.

No Other Publication Gives You SO MUCH Timely News, Money-Making Ideas & Management Information—

***PLUS** Specials! Bonus Issues!*

All Included In The Basic Low Subscription Price

COMPUTERWORLD

COMPUTERWORLD, America's largest specialized business publication, is a weekly newspaper with thorough and timely coverage of news and ideas of interest to computer users in industry, business, government and education. Unlike monthlies, **COMPUTERWORLD** covers *hundreds* of relevant news items *each week*. *But beyond the "news," you get much more* as a CW reader:

- Weekly "In Depth" articles.
- Monthly "Special Reports" on selected subjects.
- **COMPUTERWORLD OA** with incisive coverage of office automation.
- **COMPUTERWORLD ON COMMUNICATIONS** covers product and system developments in the rapidly changing communications field.
- **COMPUTERWORLD BUYER'S GUIDE SERIES** . . . a comprehensive series of product-specific lists and up-to-date information on each major product area.
- **PLUS** Other Special Issues Throughout The Year!

SUBSCRIBE NOW

Complete Form On Reverse,
Then Return In Attached
Postage-Paid Envelope. Or Use Your
Charge Card and Call
TOLL-FREE: 1-800-343-5730.

☐ **Please enter my subscription (details on back)**

☐ **I'm already a subscriber, but I'd like you to change my:**

☐ **address** ☐ **title**
☐ **industry** ☐ **other**

My current mailing label is attached and I've filled in new information on the other side.

Put old label or label information here

Please send me COMPUTERWORLD for one year. **RATES: United States $44; Canada, Central & South America $110; Europe $165; All Other Countries $245 (Airmail Service)**

☐ Check Enclosed

PLEASE CIRCLE 1 NUMBER IN EACH CATEGORY



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 709 FRAMINGHAM, MA 01701

postage will be paid by

CIRCULATION DEPARTMENT

COMPUTERWORLD

375 Cochituate Road, Rte. 30
Box 897
Framingham, MA 01701-9985

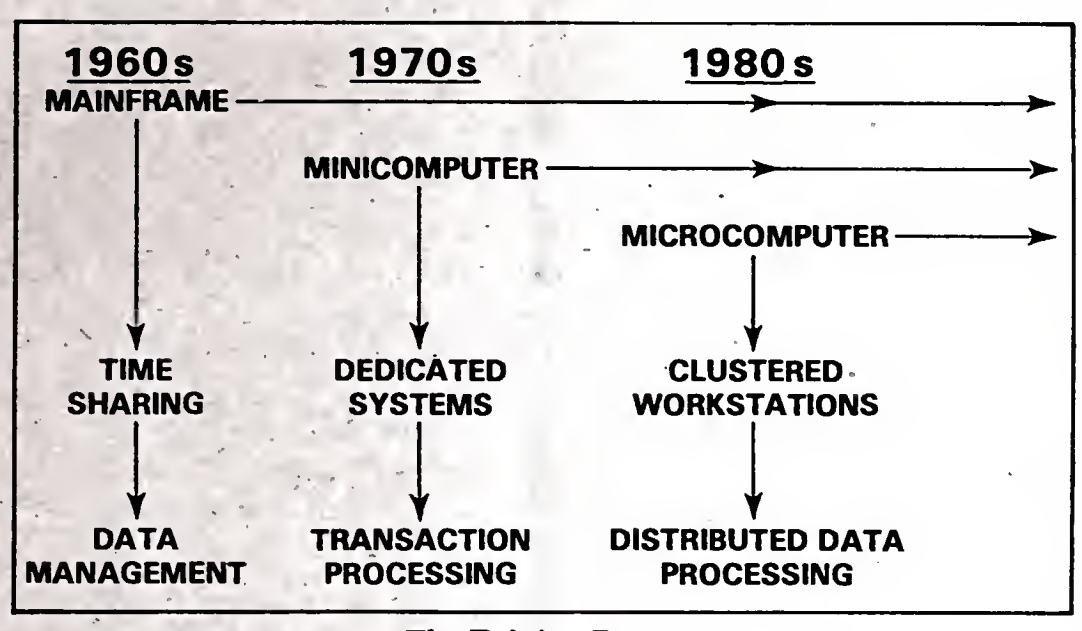
SOFTLINE/Werner L. Frank‡

What Makes DP Go? Three Driving Forces

Three discernible driving forces underlie the course of computing (see chart). Such forces bring with them a number of important technological innovations, as well as user-oriented facilities. Also, each force is ascendant for about a decade before being supplanted by another. The '60s might be identified as the period of the mainframe, the '70s as the time of the minicomputer and the current decade as the era of the microcomputer.

Driving forces are important and subtle motivators. The driving force may only manifest itself in the background and is not necessarily an end in itself. It may articulate the attitude, compulsion and direction that reflects the culture, beliefs or convictions of an individual, organization or nation.

Understanding the driving force can explain behavior and action. Furthermore, it can be used in forecasting trends, a very useful tool when employed in market planning both by industry vendors and by the DP department of an organization that is responsible for anticipating the needs of end users.



The Driving Forces

Decade of Mainframe

Consider first the decade of the mainframe. Here we saw the strong movement toward centralization of computing and the emergence of fiefdoms of control over large computer installations. The then high costs of computers were grounds for the cost-effective provision of computing with the largest affordable processor possible. Given such a resource, it became clear that rationalized use would be enhanced through the process of sharing facilities — a computing technique that became known as time-sharing.

Time-sharing served to bring about a large number of related innovations that provided the base for exploitation in succeeding periods. These technologies include:

- Development of multiuser, multitasking computing.
- Organization of communications and networking systems.
- Techniques for remote job entry and on-line programming.
- File and data base management structures.

Two types of systems were offered: the multiuser, single-application variety typified by mainframe-based airline reservations systems and the multiapplication, single-user type characterized by commercial time-sharing offerings.

From the point of view of the user, the most useful benefit that emerged in this period was the concept and realization of the data management system. Data management served not only to provide a structure for handling and accessing data, but also as the base for the eventual development of powerful applications-generating software, such as Mark IV and Mark V Systems of Informatics General Corp., Nomad of National CSS, Inc. and Ramis II of Mathematica, Inc.

Shifting Focus

The focus of computing then shifted in the early '70s from the mainframe to the minicomputer. The latter became the driving force as the result of a price breakthrough in making available a computing resource that was not only substantially less costly, but also turned out to be more cost-effective. In this sense, the minicomputer unseated the common belief that the larger the computer, the more economical the computing.

The minicomputer brought about the notion of free-standing, dedicated systems. Now it became possible to commit a single computer to a specific set of related tasks. Two independent movements took place. First, there appeared a new community of users regularly employing the computer in scientific and engineering laboratories, coupled with operations of manufacturing and process control. Second, there emerged a group of users who worked with specific on-line applications, which previously might have operated on a mainframe.

Both of these utilizations depended upon responding to discrete actions initiated by either an on-going process or a human keyboard intervention. From this was born the type of computing that now is called transaction processing.

The fundamental change that this period introduced into data processing was the decoupling of certain computing from the centralized DP shop to user-operated, remote locations.

A second change introduced through this technology was the use of the dedicated, transaction processing minicomputer in multiple roles: as a front-end processor, a network node and as a remote job entry concentrator for centralized mainframes.

Force of '80s

The stage was set for the next shift in emphasis and facility. The driving force for the '80s was clearly established in the first two years of this

(Continued on Page 47)

READER COMMENTARY/August Bequai‡

A Bright Future for the DP Criminal?

With the closing of the 97th Congress, efforts to enact the Federal Computer Systems Protection Act of 1981 — H.R. 3970 — came to naught; the bill died in the House Subcommittee on Civil and Constitutional Rights. Although some hearings were held before the subcommittee in the fall of 1982, little else came out of it. Its chairman, Rep. Don Edwards (D-Calif.), promised to study the matter further.

The question that must now be raised is, "Where do we go from here?" Surely, even the skeptics will agree that with the proliferation of computers, the problem will not go away. Rather, all indicators point to a bright future for the computer criminal. Even the Federal Reserve Board was recently awakened from its long slumber when someone attempted to gain unauthorized access to sensitive financial data stored in its computers.

Law enforcement — whether local, state or federal — will tell you that it is currently ill-equipped and lacking in resources to investigate and bring to prosecution white-collar criminals who make use of computer technology. Our judges and juries fare no better. Our criminal justice system, unable to stem the tide of street crime, now finds itself confronted with the electronic criminal.

Not a Complete Solution

Passage of H.R. 3970 would not have solved many of the problems faced by our criminal justice apparatus. Red tape, politics, economics and an army of secular clerics have to date opposed any effort to streamline the legal system.

However, if enacted, H.R. 3970 would have constituted a small but necessary step to bring our criminal justice system into the modern world. The bill would have facilitated the prosecution of those who today employ computer technology to steal with impunity.

Currently, about 16 states have enacted computer crime legislation; a reign of terror has not ensued. Contrary to what some critics of H.R. 3970 have charged, democracy is still with us. In fact, these laws, in serving to deter crime, have given the authorities an added tool with which to bring the dishonest to justice.

When Congress first enacted the present federal securities laws, its opponents charged that:

- Free enterprise would soon come to an end.
- Prisons would soon be filled with "honest and reputable" businessmen.
- States' rights would wither.
- Democracy itself would be threatened.

However, none of the above has come to pass. Unlike the federal securities laws, H.R. 3970 (and S. 240 before it) was not designed to regulate. It would not have established any regulatory apparatus.

We can spend the next 50 years debating what computer crime is. Criminologists still wrangle over an all-encompassing definition of "organized crime." We can conduct several more studies, which will, save for the fees paid to consultants, accomplish little.

The Real Threat

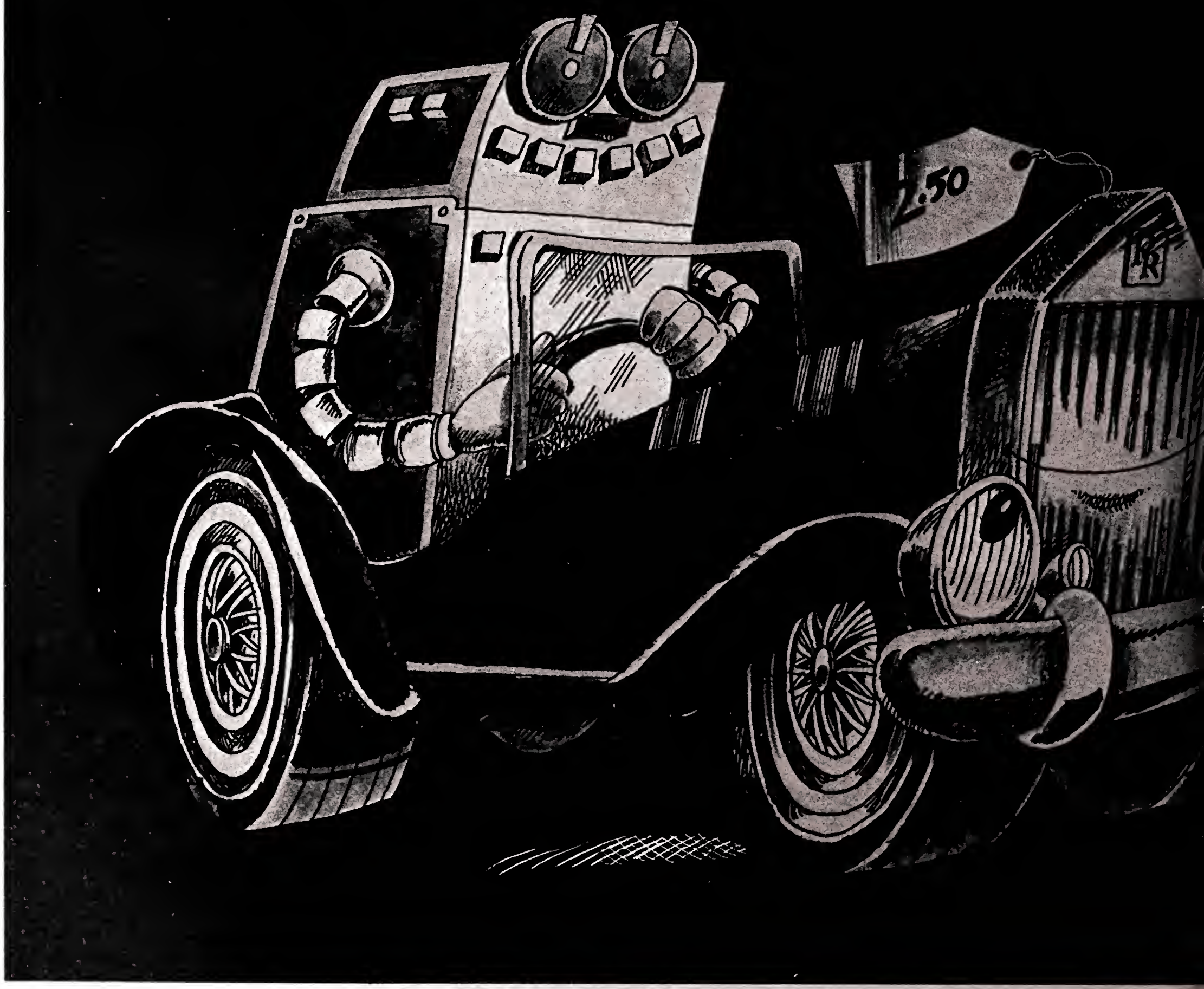
The real threat to the business community is twofold. First, there is the cost of computer crime itself. Admittedly, this is small when compared with some other forms of white-collar crime, yet is growing as the more sophisticated criminal elements make their ways into the arena. Professional criminals, as law enforcement sources will tell us, can learn to circumvent even the best computer security measures.

Second, there is the real threat that failure by the private sector to act will only open the floodgates of regulation in the near future. It will only take one more Equity Funding to provide the needed fodder for the proponents of regulation.

In the late 1920s, the Wall Street community was called upon to take active steps to bring many of the abuses in the financial sector to a halt. Instead, it closed its eyes. The rest is history. The computer industry now faces a similar choice. It can demonstrate leadership and foresight and act, or it can continue to sweep the problem under the rug. There are those who say it will follow in the footsteps of Wall Street. I say that there is still time.

Bequai is a Washington, D.C., lawyer, specializing in law and technology.

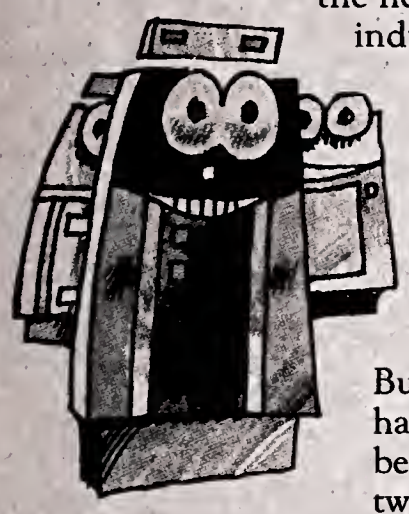
"If the auto industry had done what the computer industry has done in the last 30 years, a Rolls-Royce would cost $2.50 and get 2,000,000 miles per gallon."



Computers aren't just an industry, they're a revolution in the way mankind operates. And no one covers this revolution better than we do!

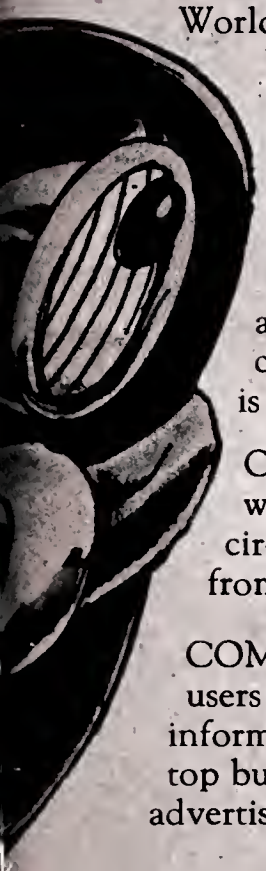
We are CW Communications/Inc. and despite our youth (only 15 years) we're the world's largest publisher of newspapers and magazines for computer people all over the world.

Most of our publications are weekly newspapers, because so many things happen so rapidly in the computer business (as the headline quote from a prominent industry executive makes so clear). In only thirty years the industry has gone from the development of the giant Eniac system, through the tube-powered, water-cooled Univac I (the world's first business computer), to the incredibly cheap, battery-powered microprocessor.

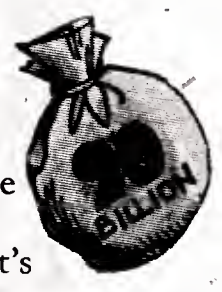


But as unbelievable as the last 30 years have been, the next 30 will probably be even more incredible. In the next two years alone, installed power of general purpose computer systems will grow almost as much as it did in the previous 16 years. And the supercomputers of the 90's will transfer data at a rate several hundred times faster than even today's speedy computers! It's hard to remember this is real science, not fiction.

This extraordinary increase in efficiency has led to a rapid expansion in computer use, as human ingenuity finds more and more applications for these powerful tools. So the market for computer products and services has turned out to be more elastic than most observers had thought.



Worldwide expenditures are currently at $90 Billion, and growing by 20% a year.



A constant flow of new products; rapid changes in technology; more and more new applications; and large and growing expenditures. It's an industry with strong need for current, complete and accurate information. Which is where we come in.

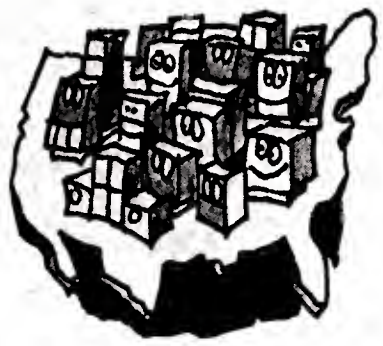
Our oldest publication is COMPUTERWORLD, a weekly newspaper with a growing all-paid circulation in excess of 117,000 (quite an increase from our modest 7,500 in 1967).

COMPUTERWORLD serves America's computer users with the consumer-oriented, objective information they need. And it has become America's top business/professional publication, measured by advertising revenue.

ISO WORLD is our semi-monthly publication for retailers, dealers, distributors and other independent sales organizations (ISOs) in the resellers marketplace. This is a relatively new marketplace which has grown up around the minicomputer and microcomputer, and which shows every sign of very rapid growth for at least the next decade.



The latest phenomenon of the computer industry is personal and desk-top computers and we're covering it with our newest publication, INFOWORLD. We report from the user's point of view — with product ratings, and information on using small computers in business and at home. It's a paid circulation, weekly newspaper, and the only publication of its type — located right in the middle of Silicon Valley — where it's all happening.



The United States alone accounts for nearly half of the worldwide computer market, but billions of dollars are spent by foreign computer people for American-made computers and computer products. And our publications penetrate those marketplaces, too.

We are publishers of newspapers and magazines in the following markets: Australasia, West Germany, United Kingdom, The People's Republic of China, Japan, Brazil, Mexico, France, Spain and Denmark.

And we provide U.S. advertising representation and editorial services to publications in the following countries: Italy, Greece, The Netherlands, Sweden, Argentina, Chile, Southeast Asia and Kuwait.

Our International Marketing Services Department can give you one-stop advertising service for any or all of these publications — including translation and production services. We'll even bill you in U.S. dollars, so it's easy as advertising in U.S. publications.

Computing is an exciting industry, with a unqiue need for information. And the publications we produce provide that information to hundreds of thousands of computer people around the world. They are excellent vehicles for reaching these people with your advertising message, and we'd be happy to give you more information on any of them. Just call or write, Roy J. Einreinhofer, Vice President, Marketing.

CW COMMUNICATIONS/INC.

375 Cochituate Road, Box 880
Framingham, MA 01701 (617) 879-0700

READER COMMENTARY

Life On-Line: A Future DP System for Your

What did *Time* forecast in selecting a personal computer as Man of the Year? Will computers replace man? I think not.

Computers, we are reassured, are tools that will make us more productive, resourceful and creative; computers should improve the quality of our personal lives.

With this in mind, I've tried to imagine a home computer system of the future. In the scenario, the computer is the narrator that will guide us through our muddled logic and bad habits. I envision the computer as the glue of our lives, enabling us to cope with what we are stuck with.

The system, called Life On-Line, would incorporate a variety of technologies into an extensive home computer network.

Without getting into the technical specifications and capabilities, Life On-Line would record all activity in the home (audio and video), translate and file digital images onto microchips and, in effect, film the story of our lives.

Through an Inquiry capability, either by typing a request at a terminal or through voice response the recorded incident(s) would be replayed on a display screen or printed out.

The practical applications of such a home computer system would significantly improve the quality of life.

Offers Order

It has been said that life is what happens while you are trying to figure out what you are doing. The Personal Management features of Life On-Line would offer order to chaos.

Personal priorities could be set via the Order Your Life feature. Either on a daily, weekly or monthly basis, you could designate what you must get done and the order in which you must do the things in question.

For example, over the audio system you could be gently prodded: "Your lawn needs trimming" or "Gee, that laundry sure is piling up." That tiny electronic voice could be just enough to get you in gear.

Unfriendly Prompts

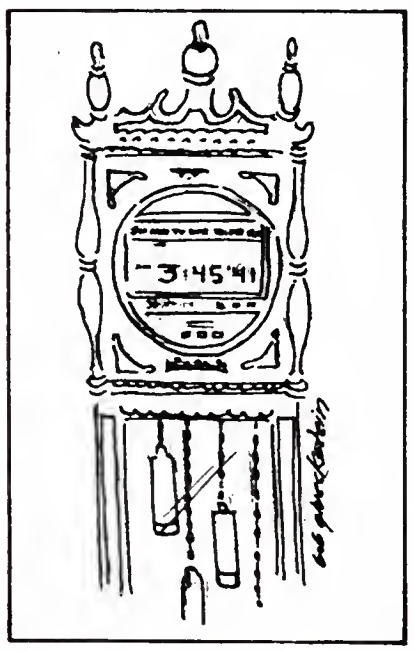
Prompts could be either friendly or unfriendly, depending on the urgency of the message.

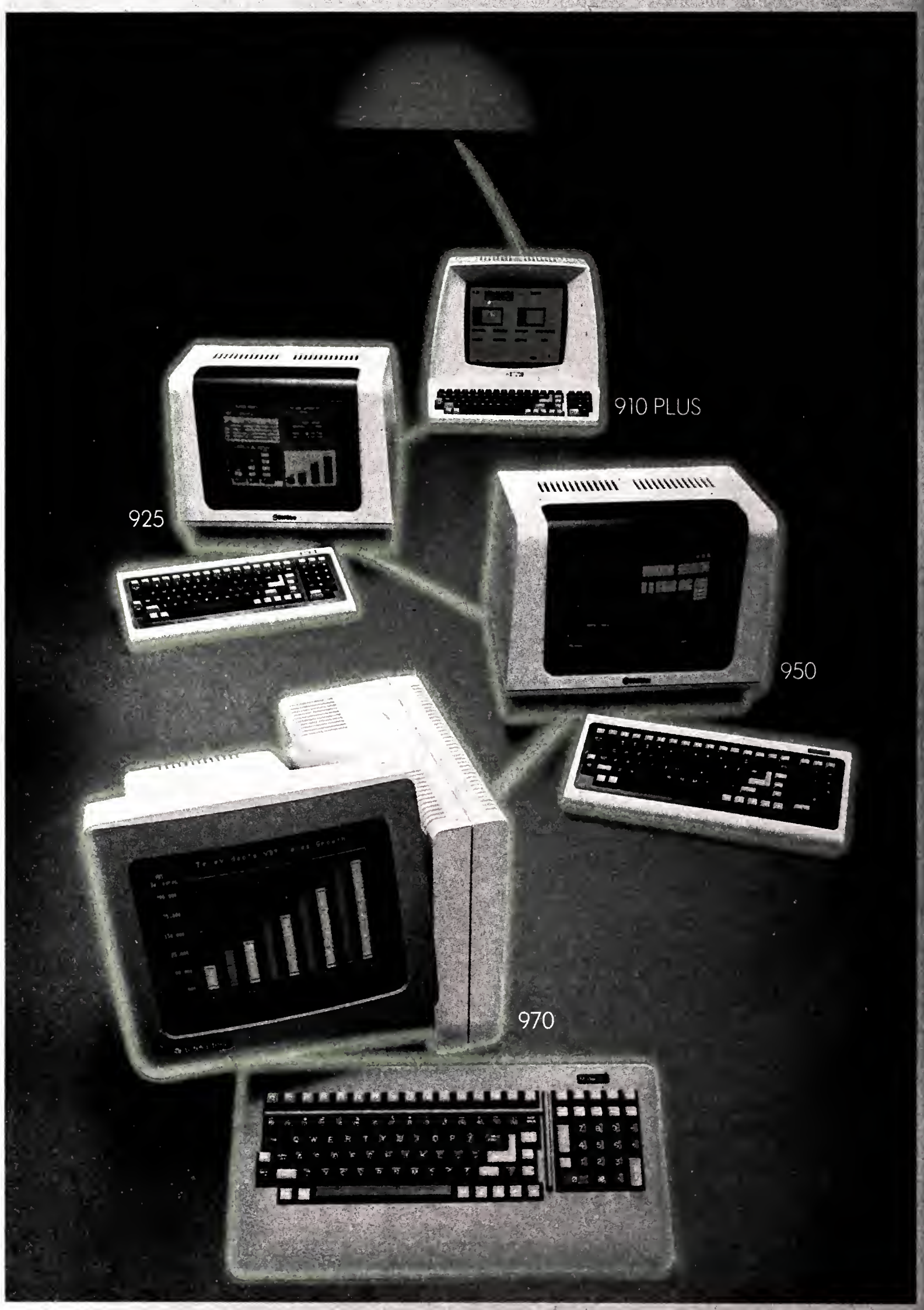
An example of an unfriendly message might be: "Is this a home or a pigsty? Clean up this mess!" This feature could also wake you and remind you of the day's activities: "Good morning sleepyhead. Don't forget to pick up diskettes on the way home tonight."

Activity Accounting records all the little things you do in unsung fashion: removing the garbage, cleaning the bathroom, putting eggs in the refrigerator and paying the paperboy. Hearsay and rumor to the effect of what a deadbeat you are could be stopped as quickly as it takes to print an activity report.

Binding Arbitration would enable you to settle personal conflicts (fights, disagreements, arguments and brawls) with mates and children by letting the computer be the referee.

Quite simply, the Binding Arbitration feature could be





Walter Murphy‡

Household That Could Put Your Life in Order

run with a simple query request — for example, "Who's more romantic?" or "What are so-and-sos annoying habits?" The computer would access memory, compile the facts and then make a decision.

This feature might be helpful to couples having difficulties; it could also bring a strong man to his knees. As a security precaution, this feature would be restricted from use by in-laws, for obvious reasons.

Child Management

Parental opinions aside, children are too often subject to the whims of parents. The Child Management portion of Life On-Line would provide the tools to negotiate the complicated agenda of a child's life.

With Parental Pinball, children would be able to forecast decisions prior to the request. This would minimize heartbreak, disappointment and resentment. A child would query a request — for example: Will dad lend me 10 dollars? — and the computer would compile the pertinent facts: past lending performance, financial solvency, parental mood, child's current status with parent (good terms/open hostility).

A degree of probability would be computed, enabling the child either to go for it or reconsider the request.

A bonus to this feature, Alternative Probability, would also compile a probability for the other parent.

Although Life On-Line would soften the flows of rejection and denial for children, it would also provide parents with facts that could stop a child's illogical rantings ("You never buy me anything!" and "You don't really love me!").

The Accounting for Your Child feature would quiet even the most obnoxious statements.

This feature would track and record all expenditures spent on your child from prenatal planning on.

For full effect, when your child is ready to leave the nest, an item-by-item invoice (including food, clothing, rent, medical, dental, schooling, entertainment and out-of-pocket expenses) could be presented as a wonderful parting gift and proof positive of just how much you've loved him through the years.

Unruly or disruptive children could be made to get in line through a Playback/Payback feature.

For an insecure adolescent, the threat of embarrassment is usually enough to dummy up any blockhead. Playback/Payback enables the parent to display the most embarrassing moments of a child's life.

Who wouldn't be ashamed to see himself at age four kissing a cousin who later became a nun. This would be followed by the question: "How'd you like your friends to see this?" Peace, and a deeper appreciation of the technology of the future, should descend upon the household.

Murphy is a consultant with a firm in New York.

We started out giving you more terminal for your money.

We still do.

We know where we started, and we know where we're going. We first entered the terminal market by offering high quality terminals with more features and functionality for less money. Our approach helped reshape the entire industry, making TeleVideo the world's leading manufacturer of computer terminals.

But these days a good combination of price and performance is expected. Manufacturers must provide more in order to be taken seriously. So we've extended the lead of our entire product line through innovation. From the economical 910 PLUS, through our advanced design 925 and 950 series, up to today's revolutionary 970, we continue to anticipate and deliver exactly what you want in your terminals.

Though the world changes around us, we always stay ahead. But our philosophy of providing more terminal for less money does not change. For information, call toll-free 800-538-8725 (in California call (408) 745-7760), or send us this coupon.

208T

TeleVideo Systems, Inc.
Dept.
1170 Morse Avenue
Sunnyvale,CA 94086

Yes, I'd like to know more about TeleVideo's family of terminals:

Name_____

Address_____

City_____

State_____ Zip_____

Telephone (_____)_____

Santa Ana/California 714-557-6095
Sunnyvale/California 408-745-7760
Atlanta/Georgia 404-399-6464
Dallas/Texas 214-980-9978
Chicago/Illinois 312-351-9350
Boston/Massachusetts 617-668-6891
New Jersey/New York 201-267-8805
Woking, Surrey/United Kingdom 44-9905-6464

TeleVideo® Systems, Inc.

See us at NCC Booth #A3008

DP USER DIRECTORIES
NY Metro-Tri-State/NY, NJ & CT
New England/ME, NH, VT, MA & RI
Mid-Atlantic/PA, MD, WV, VA, DE, DC

- The Source to Multi-Billion Dollar Markets
- The "Who's Who" of EDP Decision Makers
- 9,250-15,250 Top Computer Executives per Directory.
- 3,000-5,000 Computer User-Sites/Region
- Installed Mainframes & Minicomputers Listed
- **FUTURE PLANS:** Projected upgrades, discards, acquisitions of hardware and software specified with dates in user section and index.
- Fortune 500, Fortune 1000 and major non-industrial companies listed.
- RJE & Timesharing with computers at other locations specified in user section and hardware index.
- Company, division, address, industry, main phone #, contact's name, title, functional area, direct phone # or ext., major hardware installed, major *software* used, *consultants* used, applications, & misc. info.
- 117 indexes by type of Hardware, Software & Industry (e.g. CICS/IMS/VM/IBM 303X's/DEC PDP/RPG II/COBOL/etc.
- Key Financial Executives & EDP Recruiters listed.
- Chain of command of executive personnel indicated.
- Labels, index cards, print-outs, mag. tapes & market research are available.
- Advertise in Vendor Directory

PRICE - $125.00 ORDER - Mail check to:
Computer Management Research, Inc.
20 Waterside Plaza, Suite 1-C
New York, NY 10010
212-683-0606



DO UNTO OTHER SYSTEMS HOUSES BEFORE THEY DO UNTO YOU.

If you'd like to take unfair advantage of all the systems-house competition out there, you'll need the latest weapon on your side.

One that doesn't require excessive time and money on development. One that's so easily expandable, it helps you capture follow-on business, go after bigger jobs, expand your market share.

Now, such a breakthrough weapon exists.

The SYNAPSE N+1™ on-line transaction processing system. It lets you devastate the competition for under $340,000 a shot.

It provides fault tolerance without redundant hardware and without any programming on your part. So it doesn't take nerves of steel to go after those high-availability, high-performance contracts.

It also helps you overcome the complexities of on-line application development.

With its APPLICATION DICTIONARY™ facility which centralizes all the definitions and relationships systemwide. With its Relational DBMS which speeds up programming and simplifies maintenance. And with its SYNTHESIS™ software which automates the issues of database integrity, concurrency and recovery. All so your programmers can conquer the application problems quickly, and get you moving on to the next job.

What's more, the SYNAPSE N+1 system provides broad, on-line expansion capability in the original cabinet. Letting you go from a 32-bit, super-mini level to something off the charts.

And the SYNAPSE field team supporting your customer is as richly rewarded as the team supporting you. To give you dependable allies everywhere.

So what are you going to do?

Plod along with outmoded technology?

Or catapult yourself into the future by calling our Corporate Communications Department at (408) 946-3191?

If you choose the latter, you'll get a presentation and a free poster based on the photograph in this ad. While your competition gets to learn the true meaning of fear.

Synapse
Computer Corporation
THINK AHEAD.

Copyright © 1983 Synapse Computer Corporation, Carporate Communications Department, 801 Buckeye Court, Milpitas, CA 95035. (408) 946-3191.
SYNAPSE N+1, SYNTHESIS ond APPLICATION DICTIONARY are descriptive trademarks of Synapse Computer Corporation. Patent Pending.

Call for an invitation to our NCC hospitality suite.

The Driving Forces Behind DP's Evolution

(Continued from Page 41)

decade. This is the microcomputer with its associated impact in providing computing power to a single individual.

Currently in the form of the so-called personal computer or, more precisely, the workstation, the microcomputer is destined to become the ubiquitous information processing device. It will be on every information worker's desk, and it is likely that at least one, if not more, will find its way into the home.

We foresee the force of this tool changing the work processes and habits of organizations as numbers of workstations are brought together at departmental levels, either for purposes of sharing data or for rationalizing communications. In this sense, "communications" connotes both electronic mail services and access to data banks in public networks or from a centralized computer facility.

We can now inherit the legacy of past development: true distributed data processing, which has been spoken of for so long, but never truly realized. To achieve this objective, it is necessary to bring together the facilities of the key developments of each decade and reengineer them for operation within a distributed system.

Word of Caution

A word of caution should be introduced. Identification of the driving force of this decade should not lead us to ignore the sustenance and development of mainframe and minicomputer activities just because there seems to be a current flair for the micro.

Vendors and users both know that despite the flurry of activity around microcomputers and the large numbers of them now being introduced, the major portion of the DP budget is still associated with mainframe computing.

The message, therefore, is that the driving force must be understood in perspective — against the entire development of computing — so that it will become an integral part of future data processing solutions.

Users' Demands

In this sense, we can fully expect that users will demand the following of their DP suppliers and installations:

- Intelligent-based, local computing support: one user with one workstation.
- Applications that are appropriately configured to operate in a tiered environment of individual, departmental and organizational scope.
- Automatic access and flow of data within the distributed elements of the system.

While the past and present give us a reasonable picture of the driving forces shaping the path of computing, it is difficult, if not impossible, today to conceive of what the important focus will be 10 years hence. Where will we go next?

Frank is an independent consultant and president of the Werner Frank Computer Group located in Calabasas, Calif.

LETTERS

It's Yours If You Paid for It

As a contract programmer, I have read with interest your reader commentaries that cover the subject of preparing DP contracts and the question of program ownership: James J. Marcellino and John M. Conley's "Negotiate Contract Clauses at the Beginning" [CW, March 21]; Leslie Srager's "Prepare Before You Negotiate a DP Contract" [CW, March 21]; and Roland K. Bown's "Who Owns Software Written Under Contract?" [CW, Feb. 7].

The issue of software ownership has never arisen for me simply because what I sell are my programming and analysis skills. I do not sell programs.

Most of what I have done is not of any use to anyone but the person for whom the job was done. If a contract programmer is given assignments that are only parts of a larger system, he usually won't have anything else to sell.

In the four years in which I have done contract programming, I have yet to get a written contract. I have had verbal contracts, purchase orders and only one nondisclosure agreement, which was signed after the completion of the job.

I take the view that the program belongs to the people who paid for it to be written; the techniques and skills belong to the programmer. A carpenter possesses his tools and his craft; the house he built and its blueprints belong to the man who paid for the house to be built.

Joseph A. Petrosky
Programmer/Analyst
Bolton, Mass.

Computerworld welcomes comments from its readers. Preference will be given to typed, double-spaced letters of 150 words or less. Letters may be edited for purposes of brevity and clarity. Letters should be addressed to Editor, *Computerworld*, 375 Cochituate Road, P.O. Box 880, Framingham, Mass. 01701.

What vital natural resource can the Republic of Ireland offer computer service companies?

The right people.

Dynamic young people. Educated within a system of universities and technical colleges which inculcate the skills so vital to computer software development.

Young people capable of incisive innovative thought and pioneering concepts. They are a natural resource that the Republic of Ireland has in abundance.

Ireland has managed to avoid the attendant disadvantages of industrialisation. It still offers a very special environment: clean air, open spaces, magnificent scenery and the possibility of a lifestyle which is calm and unhurried – yet stimulating.

Meanwhile, you benefit from 100% training grants to new companies, generous employment grants, and the lowest corporate tax structure in Europe.

If people are a key factor in your business the people to talk to are IDA Ireland. Call us or contact us at any of the offices listed.

IDA Ireland
INDUSTRIAL DEVELOPMENT AUTHORITY
New York Tel. (212) 972 1000
Chicago Tel. (312) 644 7474
Cleveland Tel. (216) 861 0305/6
Los Angeles Tel. (213) 829 0081
Menlo Park, Calif. Tel. (415) 854 1800
Houston Tel. (713) 965 0292
Fort Lauderdale Tel. (305) 785 9430
Boston Tel. (617) 367 8225

REPUBLIC OF IRELAND
The new high-tech centre of Europe.

This announcement is published by IDA Ireland, 200 Park Avenue, New York, 10017, which is registered under the Foreign Agents Registration Acts, as amended, as an agent of the Government of Ireland. This material is filed with the Department of Justice where the required registration statement is available for public inspection. Registration does not indicate approval of the contents by the United States Government.



“INQUIRE® is one system everyone in DP will love”

Al Rozewski, Systems Programmer

Ralph Kerr, Database Planning Specialist

Mike Buckner, Sr. Business Systems Analyst

Judi Butanowicz, Capacity Planning Specialist

It is a day to remember when everyone at a large computer site rallies for installation of a proprietary software product. For Blue Cross of Northeast Ohio, that day occurred in January, 1982.

Applications developers and Business Systems Analysts knew they had a system which could respond quickly to user requests. Capacity Planning liked the INQUIRE performance statistics and tunability for optimum response times. Technical Services found that the installation and maintenance of INQUIRE went flawlessly. And Data Administration said that the security in the system was powerful enough to keep control, but not so rigid as to make security a problem for authorized users.

As a comprehenisve information resource management system, INQUIRE makes the job of data processing people everywhere easier. INQUIRE provides its own non-procedural user language, a relational-like database architecture, and full-screen data entry and update. Truly, INQUIRE is the productivity system for today's toughest application problems. Ask the people in data processing.

If you run MVS, VSI or VM, productive software from Infodata can help in your Information Center or Development Center. Call us today to find out exactly how.

©1983 Infodata Systems Inc.

®INQUIRE is a registered trademark of Infodata Systems Inc.

Infodata

Infodata Systems Inc.
5205 Leesburg Pike
Falls Church, VA 22041
800-336-4939
In Virginia, call 703/578-3430
Telex 899-125

Offices in:
Dallas, Los Angeles, New York, Rochester, NY, Houston, Cleveland, Tampa, Washington DC, San Francisco, Chicago

Traditional Model Of DP Structure Seen Outdated

Special to CW

NEW ORLEANS — The increasing decentralization of the DP organization will force the management information systems (MIS) manager to turn to a new organizational structure and a new methodology, said John F. Rockart, director of MIT's Center for Information Systems Research.

As keynote speaker for the International Conference on Computer Capacity Management here recently, Rockart likened the traditional model of the DP organization to industrial sales. "There was one major customer for one major product." Now there are terminals on every desk, making it more similar to retail sales, he explained. Even more decentralization is on the way, he warned, and the role of the information systems manager must change also.

The originator of the concept of critical success factors (CSF), Rockart noted that his center studied nine organizations and interviewed each top MIS executive to determine today's CSFs. Based on this study and other research, he formulated three eras of information systems growth. In the first era, when DP was focused on accounting during the 1950s to the 1960s, DP had its people and hardware in one place, and the users came to the DP manager. Sometime during the 1960s, a new era began, driven by new applications.

"In the second era, we found out two things about operational systems: operations people have to know the status of things right now," he explained. Secondly, they were working with local data bases. Hardware went from large, centralized computers to decentralized local minicomputers.

(Continued on Page 52)

'Corvet' Generates Cobol, Runs on IBM OS/VS, DOS

MINNEAPOLIS — Analysts International Corp. (AIC) has unveiled an application generator for IBM 4341 and larger systems running under OS/VS and DOS. It will be introduced next week at the National Computer Conference in Anaheim, Calif.

Written in Cobol and designed to generate Cobol, the package, called Corvet, works in an IBM Btam environment and initially will interface with Cincom Systems, Inc.'s Total and IBM's IMS data base management systems and IBM Vsam files. Because it was developed on Data General Corp. equipment, the software also will run on DG's MV/8000 and MV/10000 systems.

Victor Benda, senior vice-president of AIC, said this product differs from existing application generators because it enables nonprogrammers to develop fully production applications without intervention from the management information systems (MIS) staff until the final stages.

The Corvet user is queried by the system through all stages of application development, Benda said. Initially, the user is asked to lay out the essential data flow of the program. This includes a half-dozen symbols, such as process and decision boxes and references to procedures. Once this is completed, the system does consistency checks for problems such as loops.

The user is then asked from where the inputs to the system will come. He labels each process box appropriately with symbols for card files, terminals and tape reels and includes a tape description. The user then describes the data itself in terms of type of data (alphanumeric, numeric), field length, decimal information and where it is going. The user is then asked to describe the relationship of the information to determine how it will be accessed.

Tutorial Technique

Corvet's tutorial technique questions the user methodically until everything is resolved, Benda said. The same technique is used to describe screen input and reports. Before the generated code is put into production, the DP professionals review data structures for efficiency and gauge the impact on performance.

The $93,000 fee for Corvet, which will be available in July, includes one year of support and a Tektronix, Inc. 4112A black-and-white terminal with a microprocessor and a diskette. Benda explained that the Tektronix terminal was chosen because it is compatible with the IBM 3270 and supports the graphics needed for flow diagrams. Subsequent releases of the package can be used with the IBM Personal Computer instead of the Tektronix terminal.

Further information about Corvet is available from AIC, 7615 Metro Blvd., Minneapolis, Minn. 55435.

Utilities Target VM-Based Systems

SUNNYVALE, Calif. — Dovetail Systems, Inc. has announced two software packages for IBM and plug-compatible VM-based systems.

BackupV, an IBM CMS-based automatic backup system, provides a means to preserve CMS minidisks in a VM/370 or VM/SP system. The system is said to address the problems of operator inconvenience and backup catalogs.

TapelibV, also CMS-based, is an automatic library management system that is said to maintain a catalog of all tape volumes allocated to CMS users. The systemwide library reportedly manages tape drive allocation, user ownership of volumes, ownership by data set name and read-only and read/write access to users' tapes.

Each package costs $4,980, or $8,983 for both from the vendor at 1030 W. Maude Ave., Sunnyvale, Calif. 94086.

Bill of Material System Offered

ATLANTA — American Software, Inc. has released an on-line bill of material system for IBM 30 series and 4300 series and plug-compatible mainframes running IBM DOS, OS or MVS operating systems.

The system includes prompts and menus explaining all bill of material functions, a spokesman said. Users have on-line access to single-level explosions and implosions of data as well as details regarding a single component's relationship with its parent.

A copy feature offers the ability to copy a bill's structure to a similar parent, then make modifications and submit a new item. A "delete all" function allows batches of old bills to be eliminated from the system.

The package starts at $28,000 from 443 E. Paces Ferry Road, Atlanta, Ga. 30305.



CICS Users: Increase System Uptime

Look at the benefits when you install **DADS**, a **D**ynamic **A**llocation **D**eallocation **S**ubsystem:

- Improve Mean Time to Recover
- Ease Batch Scheduling Constraints
- Avoid Initiation Delays
- Simplify Problem Determination
- Improve CICS System Productivity

Take **DADS** Advice for Greater CICS Availability

If you're a CICS/MVS user, take **DADS** advice today! Call collect **203 529 7128** or return this coupon to our attention.

CW-5/9/83

☐ Send me **DADS** for a 30 day free trial.
☐ I'm interested, please provide more information about **DADS**.
☐ Also please provide information about the complete family of software products available from **STAR**.

Name _____ Title _____

Organization _____ Telephone _____

Address _____

City _____ State _____ ZIP _____

STAR

Software Technologies and Research, Incorporated 41 New Britain Avenue Rocky Hill, CT 06067 203 529 7128

For OS/VS1, MVS, DOS/VSE

Security Added to 'Com-Plete'

RESTON, Va. — Software AG of North America, Inc. has announced Version 4.3 of its Com-plete teleprocessing system for IBM OS/VS1, MVS and DOS/VSE operating systems.

The new release includes Com-pass, a parallel activity and security system said to provide multiple levels of parallel program execution at each terminal in the system. Com-pass allows several programs to be worked on simultaneously.

Security features permit a detailed profile of allowed programs and utilities to be associated with each authorized user of Com-plete, including an automatic start-up transaction, a spokesman said. The enhancement also includes a new program editor, an on-line help facility and a message-switching and storage facility for communications between users, the spokesman said.

The new release is free to existing customers. The purchase price starts at $50,000 for the DOS/VSE version from 11800 Sunrise Valley Drive, Reston, Va. 22091.

'SAS/Graph' Upgraded To Support IBM Micros

CARY, N.C. — SAS Institute, Inc. has enhanced its SAS/Graph graphics software system to support the IBM Personal Computer when used as a terminal connected to a host computer.

Three versions, supporting 25 by 80 or 25 by 40 character screen with 200 by 640 or 200 by 320 resolution in monochrome or three-color models, are provided. Graphics files can be recorded on disk and replayed later using a program supplied by SAS.

To generate displays on the IBM Personal Computer, users must be running SAS and SAS/Graph on an IBM 370, 30 series or 4300 series or compatible mainframe. The Personal Computer requires 64K bytes of memory, a color/graphics monitor adapter, asynchronous communications adapter and asynchronous communications support.

SAS is available for a first-year license fee of $7,500. SAS/Graphics costs $5,000 for a first-year license fee. SAS can be reached through Box 8000, SAS Circle, Cary, N.C. 27511.

Candle Enhances Omegamon, Dexan to Support IMS, MVS/XA

LOS ANGELES — Candle Corp. has announced plans to support an external monitoring mode for its Omegamon/IMS and Dexan/IMS products for monitoring performance of IBM's IMS.

The company reportedly also enhanced its Omegamon/MVS and Dexan/MVS performance monitoring software to support IBM's MVS/XA operating system.

In the external monitoring mode, Omegamon/IMS and Dexan/IMS monitor IMS from their own address space rather than from inside the address space of the IMS control region, a spokesman said.

No virtual storage within the IMS private area is needed, and installation and maintenance of the performance monitors are simplified.

The enhancement is available at no charge to current users running MVS/SP 1.3 and will be available as part of Version 200 of the IMS products to be released this quarter. Omegamon/IMS and Dexan/IMS each cost $19,500.

Support for the new MVS/XA features includes displays of device I/O queues, lock control unit and channel path statistics, maps of virtual storage above 16M bytes and displays of new MVS/XA control blocks, the spokesman said. The package includes improvements to the automatic exception analysis, a control block dumping facility, a user parameter module, authorized cross-memory and virtual memory commands and improved ease of installation, according to the spokesman for the firm.

CPUs that were licensed for Omegamon/MVS and Dexan/MVS before July 15, 1982 will receive the support at no additional cost. Each package costs $19,500 from Candle Corp. at Suite 2404, 10880 Wilshire Blvd., Los Angeles, Calif. 90024.

Graphics Kit Introduced

TORONTO — Dataplotting Services, Inc. has announced a graphics subroutine library for use in Digital Equipment Corp.'s VAX/VMS, Prime Computer, Inc.'s Primos and IBM's MVS operating environments.

D-Pict/Virtual Graphics Language (D-Pict/VGL) is said to be a modular, user-oriented computer graphics system for use by application programmers.

Written in Fortran '77, D-Pict/VGL is priced at $8,000. The vendor is located at 225 Duncan Mill Road, Don Mills, Ont., Canada M3B 3K9.

UNITECH ANNOUNCES AN AUDIT AND CONTROL REPORTING SYSTEM

FOR OS/MVS INSTALLATIONS

- AUTOMATES RUN-TO-RUN BALANCING AND CONTROL
- ELIMINATES CLERICAL BALANCING
- STANDARDIZES CONTROL REPORTING
- CAN BE USED IN EXISTING APPLICATIONS WITHOUT PROGRAM CHANGES
- REDUCES DESIGN & PROGRAMMING COSTS OF NEW APPLICATIONS

FOR MORE INFORMATION, WRITE OR CALL
UNITECH SYSTEMS, INC.
823 COMMERCE DRIVE, SUITE #230
OAK BROOK, IL 60521
(312) 986-0133

TONE 3

High Performance — Low Overhead

TSO for VS1

Compare these Features:

- Identical TSO command syntax (we use their manuals)
- Full TSO CLIST capability
- TSO TEST command support
- SPF support
- No retraining for MVS/TSO
- Full Screen Edit capability
- Dynamic allocation
- Hot internal reader
- Review output at the terminal
- Interactive program execution
- On-line testing and compilation
- No user swapping
- Multiple users per partition
- Shared Subpools
- Re entrant code
- Enhanced 3270 support
- Full ASCII terminal support
- Powerful Sys. Prog. package
- Standard VS datasets (No intermediate programs required)
- Programmable PFK support
- Run TSO packages under VS1
- THE ONLY TRUE TSO FOR VS1!
- WORLD WIDE SALES AND SUPPORT

TONE Software Corp.

Call or Write for Details

1735 SO. BROOKHURST ST.
ANAHEIM, CA 92804
PHONE: (714) 991-9460
TELEX: 181592

TIRED OF BEING DUMPED ON?

LEARN HOW TO SOLVE THE TOUGHEST CICS INTERNALS PROBLEMS.

SysEd's CICS Internal Architecture course is for systems programmers and others who are up to their eyebrows in the toughest kind of programming, debugging, performance and recovery problems.

This demanding course eliminates the mystery surrounding the internal workings of CICS so that students have the knowledge and skills they need to approach both transaction and systems dumps confidently, and handle performance and application design problems in an organized, informed manner. There is no other source for this kind of in-depth training . . . *anywhere.*

SysEd's Internals courses are held weekly at our computer training centers in New York City, Chicago and San Francisco—or at your own location. Special weekend courses for consultants are available. For more information call Dave Shapiro 212-889-3386.

SYS-ED™

ONE PARK AVENUE, NEW YORK, NY 10016 • (212) 889-3386

Feed Your Mind... Feed Your Body



Take a moment to stop by Booths N3509-N3511 and browse through Prentice-Hall Publishing Company's exciting new list of computer books for 1983. Whether novice or professional, you're sure to find timely and interesting new publications.

Also, pick up a FREE copy of the **Prentice-Hall Restaurant Guide to Anaheim** featuring great places to eat in Disneyland. We've searched hard to highlight the best spots to pamper your palate.

Now, there's real food for thought!

Prentice-Hall

THREE VAX-11/730 MEMORY BOARDS FOR THE PRICE OF ONE.

Three of our NS753 boards for the price of just one VAX™-11/730 memory board from DEC.®

Except for the price, you can't tell them apart—from the 1.0 megabyte of RAM, down to the *nth* degree of form, fit, and function.

Of course, we don't expect price alone to build confidence in a product. The people who have already bought some 2,000 megabytes of various VAX memories from us had other reasons, as well.

People buy our NS753 boards because we back them up with two-year warranties.

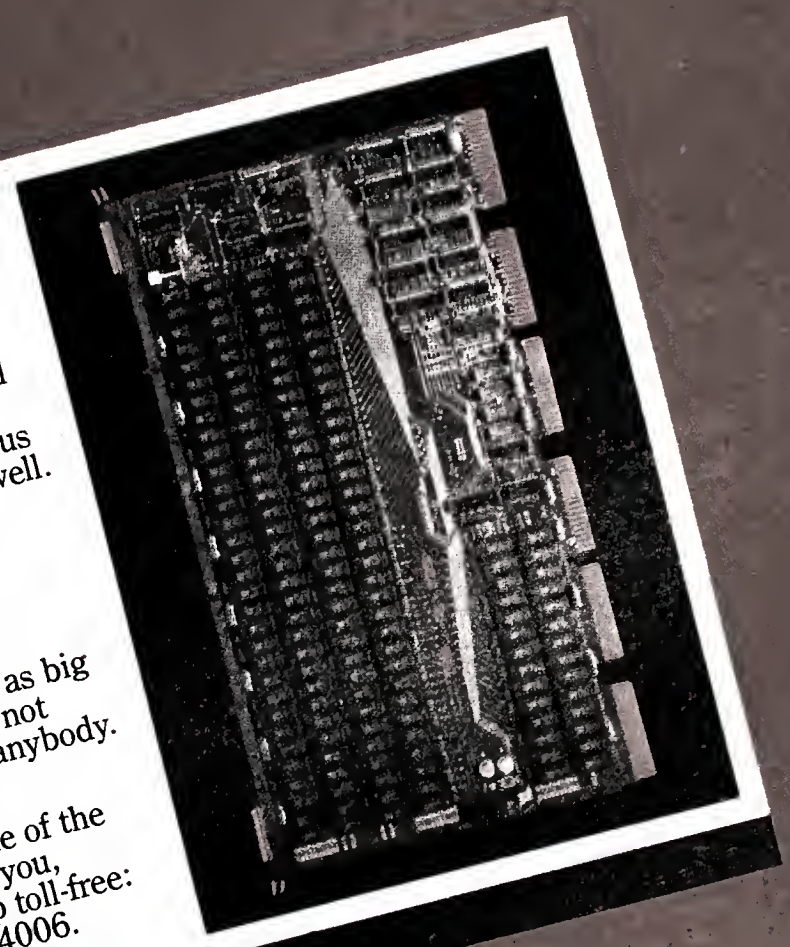
Because we ship them off the shelf.

Because we offer an emergency "Loaner Program."

And because—well, when you buy from as big a name as National Semiconductor, you're not getting three for the price of one from just anybody.

Read about the NS753. Talk with us.

For complete specifications and the name of the representative or broker/dealer nearest you, please call our Customer Support group toll-free: 800-538-8510; in California, 800-345-4006.



VAX is a trademark of Digital Equipment Corporation
DEC is a registered trademark of Digital Equipment Corporation

National Semiconductor
MICROCOMPUTER SYSTEMS DIVISION

ALWAYS THE FIRST ALTERNATIVE FOR DEC-COMPATIBLE MEMORIES.

FLOW_Calc™
THE VAX spreadsheet calculator
$3500
to try it yourself, call:
800-235-6788 (in California, call 805/964-7724 collect)
TWX/TELEX 910-334-1193
The Software Workshop®
GENERAL RESEARCH CORPORATION • A Flow General Company
5383 Hollister Avenue • Santa Barbara, California 93111

New Organizational Model Seen Key to Growing Decentralization

(Continued from Page 49)

The proliferation of decentralized minis was facilitated by decreasing costs of hardware. However, Rockart observed that IBM continued to treat the world as if all applications were of the accounting era-one type. In this regard, the vendor missed the shift to the second era. MIS had become a matrix management function rather than a direct management role, and the MIS manager had to sell and persuade rather than tell DP people what to do.

"We lost lots of heads of MIS at this juncture," he said. "Those who were good supervisors but lousy executives couldn't make it."

In the third era, accounting and operations are still present, he said, but there is a third wave of applications that are entirely new. These relate to communications and information. They relate to decision support systems, executive support systems and telecommunications.

"None of these areas has good paperwork processing in place at this time," he said, and applications development is evolutionary because no one knows what the application will look like at the end. The programmer essentially develops a prototype and asks the users if this is what they want. Changes are made, and it evolves.

"There is no hard justification for this process. It has to come from the budget," according to Rockart, who added, "Capacity management is difficult; we can't do business as usual."

Inappropriate Applications

He focused on the proliferation of end-user applications for which use of Cobol is not appropriate and which therefore depend on the use of fourth-generation languages. "They can be used by end users, and they rely on relational data bases," he said. "Since they are used by amateur end users, they can burn up a lot of corporate resources without doing anything at all."

DP professionals naturally are concerned about the efficient use of resources and about giving end users access to corporate resources. They are also concerned about whether these applications will work. He pointed to another aspect: "What if they work? Does this signal the end to the need for systems developers?"

Applications of the first and second era type are growing at a rate of about 10% to 15%, Rockart said.

Third-era-type applications have a totally unpredictable — but high — growth rate; 50% is the lower limit.

"There could be a 50% to 100% growth rate in [million instructions per second (Mips)] devoted to type-three applications," he added, noting that currently about 50% of Mips are for type-three applications during the day (about 30% to 50% overall).

"What will it be like in 1990?" he asked.

With the growth rates he has found, it is conceivable that 75% to 80% of Mips would be used for end-user applications.

This is three times as great as the percentage for accounting and operations applications.

Everything a VAX user could ask for in a storage subsystem.



The Emulex package deal.
Software transparency, low prices, rental/purchase option plans, a trade-in program and a service security blanket. Included are pretested drives and controllers; direct factory installations; fulltime hardware/software applications assistance; and nationwide service through Control Data, General Electric and Tymshare.



Emulex innovation—introducing our Eagle disk/Keystone tape combination.
Where else can you get a unit that optimizes the Fujitsu Eagle's 1.8 MB/sec transfer rate and provides backup, archiving, journaling, and the media interchangeability of ½-inch tape? All in one 42-inch cabinet. Best yet, the PXD-51 is available in six DEC-emulating models for PDP and VAX users on the CMI, SBI or Unibus.



The world's best drives and controllers.
Emulex subsystems let you be very picky. You select proven tape drives and disk drives from 80 to 675 MBytes. Plus you can mix and match fixed and removable disk drives of varying sizes and configurations. At the heart of the subsystem is an Emulex controller designed specifically for your particular DEC CPU.

Emulex has been and continues to be the pioneer in DEC-compatible subsystems. And in each product our objective is clear: to make your DEC system faster, more efficient and capable of processing larger, more complex programs more reliably than any other alternative.

Find out more about the total Emulex package. Phone toll free: (800) 854-7112. In California: (714) 662-5600. Or write: Emulex Corporation, 3545 Harbor Blvd., Costa Mesa, CA 92626.

DEC and Unibus are registered trademarks of Digital Equipment Corp.
Eagle is a trademark of Fujitsu Corp.
Keystone is a trademark of CDC Corp.

See us at NCC Booth #A3100

EMULEX
The genuine alternative.



SYSTEMS SOFTWARE? WE HAVE IT ALL!

It is, in fact, the broadest line of systems software anywhere.

And the most used. With over 6,000 software systems installed worldwide. With products that are recognized leaders—and set the industry standards—for dataset management...production workload management...data center management...and DOS to OS conversion.

UCC is the one company with the software—and the expertise—to help you take total charge of critical operating areas. To help you plan for growth... manage it...and, finally, control it. With the only solution that makes sense today: improved productivity.

Who else can make this claim? Nobody. Because nobody else has these software packages:

The UCC-1 Tape Management System

The most widely used tape management system in the world. Now, over 2,400 OS data centers are getting assured protection for their tapes.

UCC-1 eliminates data losses. Improves operating productivity. And solves the problem of tape protection. Completely.

UCC-1 effectively manages all your tapes, preventing accidental loss or destruction of valuable data. And it gets rid of those inefficient hardwritten records—along with the costly mistakes they breed.

The UCC-2 DOS Under OS System

All you need to convert to OS...the easy way! Because, with UCC-2, you can run under OS *without* converting DOS programs.

UCC-2 makes it possible to move the entire DOS workload to an OS environment...without converting any DOS programs to OS. You get to OS more quickly, easily, and efficiently than ever before...and hold your conversion costs to the minimum. Over 1,000 data centers have already proven UCC-2 is the best way to get to OS.

The UCC-20 OS JCL Generator

Now, you can create OS JCL... automatically. And, UCC-20 — together with UCC-2 — makes the transition to OS even *easier.*

UCC-20 allows you to quickly produce fully functional OS JCL...without having extensive OS knowledge or training. Plus, your JCL will match *your* predefined standards. Best of all, UCC-20 automatically handles syntax, keyword, and punctuation requirements—both simple and complex.

The UCC-3 Disk Management System

It can increase your usable DASD space by a *third!* And it eliminates DASD problems that cost you time and money.

UCC-3 recovers disk space automatically. It ends space waste...ends fragmentation, overallocation, retention of obsolete data sets, inappropriate data set placement. Data is migrated in minutes...instead of hours.

What's more, it fully protects your valuable data during use, during back-up, during compression, and during migration. Automatically.

The UCC-6 PDS Space Management System

It eliminates costly PDS compression...completely. And it helps you avoid most other PDS-related problems.

UCC-6 automatically controls and inventories the members within PDS. This means you get more efficient use of existing disk space. And avoid unnecessary ABENDS. UCC-6 offers security and automatic back-up at the member level. Plus, it prevents processing delay by allowing multiple jobs to update the same PDS simultaneously.

The UCC-7 Automated Production Control System

The ultimate tool for realtime, automated control of your entire production job processing. From automatic scheduling and submission of jobs...to tracking receipts of data and distribution of output.

UCC-7 is the only system with dynamic feedback...it's self-adjusting and warns you of potential delays. You get continuous workload balancing for the most efficient use of your hardware resource. Plus, it gives you centralized information for all work areas—Data Preparation, Scheduling, Operations, and Distribution.

The UCC-8 Data Center Management System

It helps you efficiently control all support and service activities...throughout the data center. With one online, integrated package.

UCC-8 provides management support for your entire company—as well as for your data center. You can instantly monitor the immediate status of every project in your shop...determine priorities and assign responsibilities for every project...control equipment and procedural changeovers...and identify the expense associated with each and every problem.

The UCC-9 Hardware Reliability Management System (RELIABILITY PLUS)

The most authoritative information on hardware reliability that's available. Anywhere. Now, both you and your vendors will know what the score really is.

UCC-9 gives you the facts about hardware failure in your data center...and in over 700 other participating centers. You have the data you need to make wise hardware decisions. And, every day, UCC-9 pinpoints devices that need attention...before they bring the system down, before they cost you extensive recovery time. Now, preventative maintenance is a reality.

The UCC-10 Data Dictionary/ Manager

The only dictionary package that controls the entire IMS environment. Applications ...databases...data communications ...and message format services.

UCC-10 is a real workhorse in both a development and production environment. It can significantly improve the productivity of your development staff. And assure the integrity of your production system—while enforcing standards and improving security.

In fact, UCC-10 is much more than just a data dictionary. It is the tool for managing and controlling your investment in people and programs.

The UCC-11 Automated Job Management System

The only system that can automatically re-start or re-run any job. From the proper job step. Without manual effort. Without delay. Without error.

Not only that, UCC-11 eliminates whole categories of reruns outright...they just can't happen. UCC-11 tracks jobs for you. So you know how many reruns occurred, when, where, why, and at what cost in resources. Now you can analyze the problem. And solve it.

Call 1/800-527-5012...

...for more information about UCC Systems Software (in Texas, 214/353-7533; in Canada, 416/424-4171).

UCC

THE MOST COMPLETE SOFTWARE COMPANY IN THE WORLD

University Computing Company Dallas • Toronto • London • Paris • Dusseldorf

SAS, Not Just for IBM ...Anymore

Since its beginnings, SAS® has provided a powerful and flexible software system to IBM users. Now SAS offers VAX,™ ECLIPSE® and PR1ME® users the same power and flexibility.

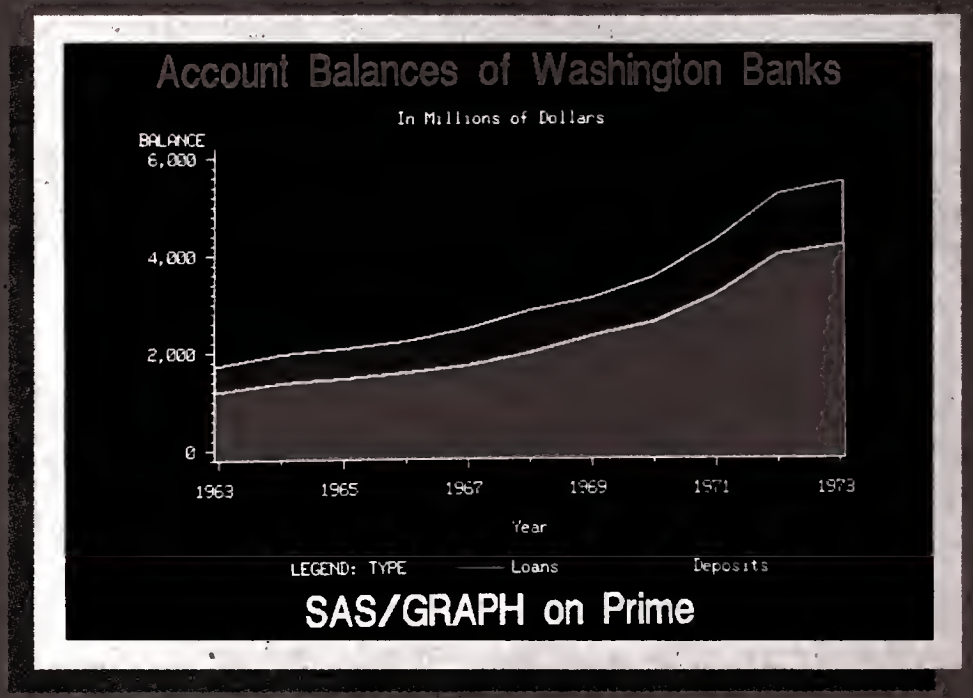
You get a twofold advantage with the SAS System. A library of ready-to-use procedures gives you the power to analyze data without formal training. SAS even provides an on-line help facility. With a few English-like commands, you can use SAS for data analysis, market research, capacity planning, financial reports, summary statistics, charts, plots, personnel reports and many other jobs.

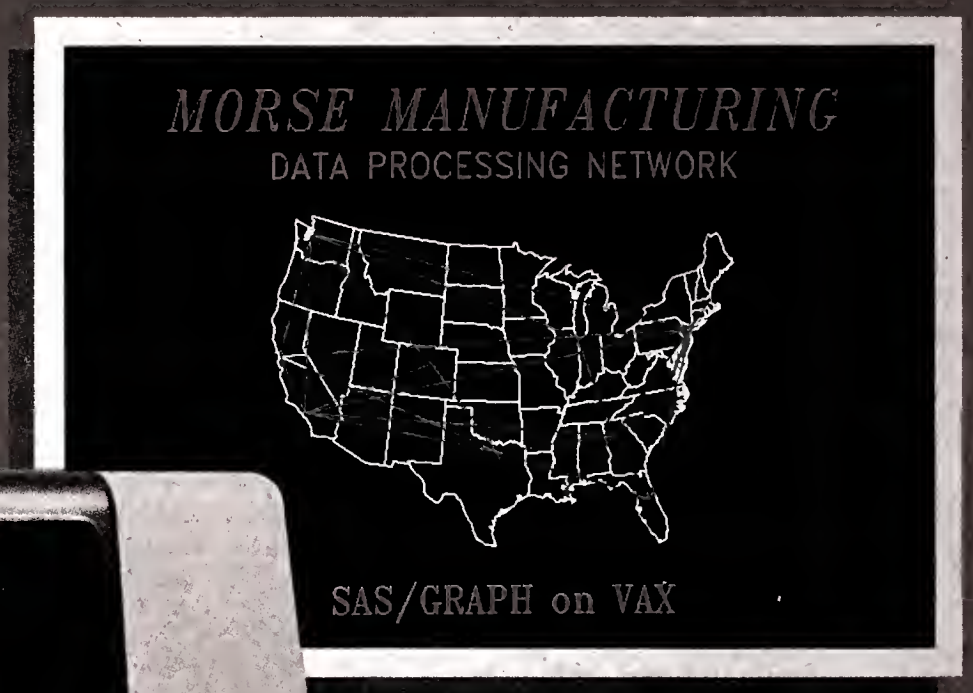
In addition to these routine reports, the SAS System provides extensive data management and retrieval tools, combined with a macro facility, to handle all your complicated programming needs.

In short the SAS System gives you the analytical tools for a complete Decision Support System, integrating SAS for data management, statistical analysis and report writing; SAS/GRAPH™ for color graphics; SAS/ETS™ for econometric and financial modeling, and forecasting; and SAS/FSP™ for data entry, letter writing and financial spreadsheet reporting.

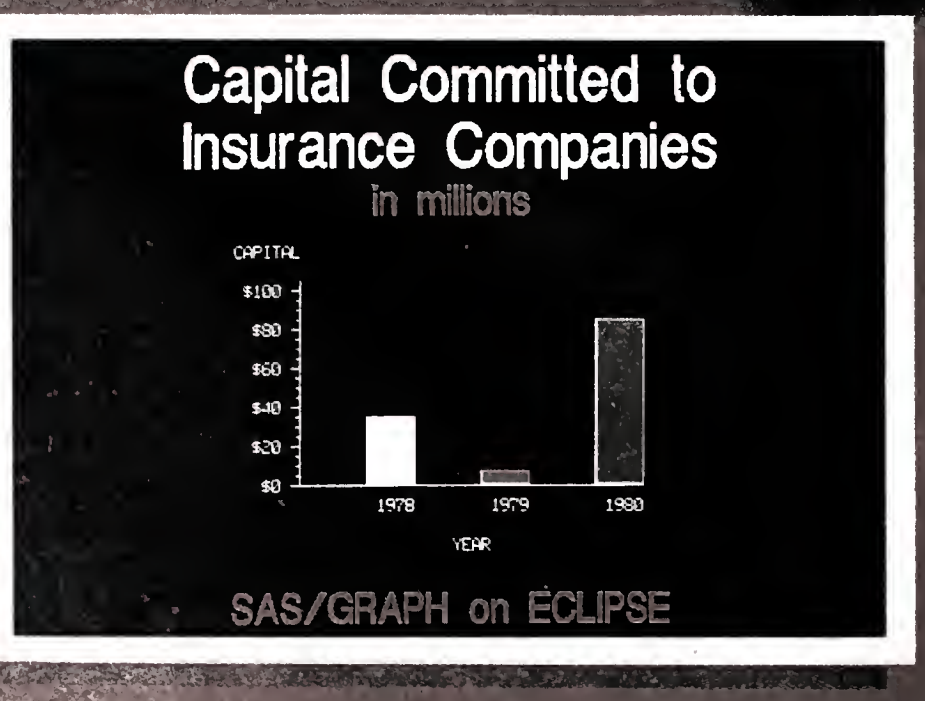
Now you can enjoy the power and flexibility of mainframe software on a minicomputer – with SAS.

Call or write today. SAS Institute Inc., SAS Circle, Box 8000, Cary, NC 27511 USA. Telephone (919) 467-8000. Telex 802505.









SAS Institute GmbH,
Rohrbacher Strasse 22, D-6900
Heidelberg 1, West Germany.
Telephone 06221-29014. Telex 461581.

SAS Software Limited,
The Centre, 68 High Street,
Weybridge, Surrey KT13 8BL,
UK. Telephone 0932-55855.
Telex 946138.

SAS Institute (NZ) Ltd.,
Level 9, Greenock House, 39 The Terrace, PO Box 10-109,
Wellington, New Zealand. Telephone (04) 727-595. Telex NZ 31525.

SAS Software Pty. Ltd.,
Level 60, MLC Center, 19-29 Martin Place, GPO Box 4345,
Sydney, NSW 2001, Australia. Telephone (02) 235-2199.
Telex AA 71499.



SAS is the registered trademark of SAS Institute Inc., Cary, NC, USA. SAS/GRAPH, SAS/ETS and SAS/FSP are trademarks of SAS Institute Inc. VAX is a trademark of Digital Equipment Corp., Maynard, MA, USA. ECLIPSE is the registered trademark of Data General Corp., Westboro, MA, USA. PRIME is the registered trademark of Prime Computer, Inc., Natick, MA, USA.
Copyright © 1983 by SAS Institute Inc.

For CICS-Based Systems

'Guardian' Gets Update

FORT LEE, N.J. — On-Line Software International, Inc. has announced enhancements to its Guardian on-line security system for IBM and plug-compatible CICS-based systems.

The enhanced system restricts activity on the basis of transaction contents without the need for application program changes, a spokesman said. If an unauthorized command is entered, Guardian prohibits further activity. The enhancement also offers protection of IBM Vsam files and data bases on the basis of file contents.

The system allows authorization to be updated on-line and security rules can be modified or added on-line to take effect permanently or temporarily, the spokesman said. The security system is available for IBM and plug-compatible mainframes and supports CICS for both IBM OS and DOS operating systems. Guardian offers protection for all transactions, programs, files, terminals and IBM DL/1 and Cullinet Software, Inc. IDMS data base management systems, according to the vendor.

The package costs $20,000 for DOS or $27,500 for OS from On-Line Software International at Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

Dyl-Audit Release 3.0 Offers Linear Regression

GRANADA HILLS, Calif. — Dylakor, Inc. has announced Release 3.0 of Dyl-Audit, its auditing system for IBM mainframes, which operates in either free-form, English-like syntax or fixed-form, parameter-driven formats.

The release reportedly offers linear regression and trend line analysis. Dyl-Audit calculates regression line coefficients, standard error of estimate, correction coefficient, coefficient of determination and coefficient of nondetermination.

Integer, decimal and negative exponentiation is now supported. Letter-writing capabilities have been enhanced, enabling the user to specify a range of detail lines to be printed within the body of a letter. The print size of an edited amount field can be specified, and letter-writing logic has been optimized.

Release 3.0 is free to current customers. Dyl-Audit costs $1,272 annually on a three-year lease. DYL-260 and DYL-280 report writer/data management/utility systems, which support Dyl-Audit, are priced at $1,680/year on the same plan. All products are available for IBM OS, DOS, CMS and SSX systems on IBM 360, 370, 30 series, 4300 series and plug-compatible hardware from Dylakor, 17418 Chatsworth St., P.O. Box 3010, Granada Hills, Calif. 91344.

ADR Ties MSA Packages To ADR/Datacom

PRINCETON, N.J. — Applied Data Research, Inc. (ADR) has announced the availability of Management Science America, Inc.'s (MSA) financial and human resource systems using the ADR/Datacom system.

The ADR/Datacom system is said to provide a relational data base management system designed for on-line applications that must meet high-volume activity and rapid response time requirements.

The MSA products have been tested with the ADR/Datacom system using ADR's Vsam transparency facility, said to enable application programs originally written to access Vsam key sequence data sets to access data base files without program modification.

The ADR/Datacom data base and Vsam facility for an IBM OS environment costs $83,000, and for a DOS environment, $67,900. For IBM 4321, 4331, 370/125 and 370/135 DOS environments, the products cost $50,900, a spokesman said from Rt. 206 & Orchard Road, CN-8, Princeton, N.J. 08540.

Screen Tool Uses 'Painting'

ATLANTA — Datascan America, Inc. has introduced a data management software system designed for business executives.

Enter/Scan features screen "painting," which allows the user to design screen formats and define data fields for information input. The Enter/Scan user "paints" the desired entry fields onto the input screen and develops a screen format. Once the format is established, the user defines each data field by completing a data definition menu. As each data field is defined, it is automatically entered into a dictionary, according to the vendor.

Enter/Scan runs on the IBM System/34 and on Datapoint Corp. systems. Prices for Enter/Scan range from $1,000 to $6,000.

More information is available from Datascan at Suite 222, 4675 N. Shallowford Road, Atlanta, Ga. 30338.

In a world of dumb printers, Memorex has a Remote Printing System that thinks for itself.

In theory, remote computer output printing is a dynamite concept.

Reports get out to the right people, right away. Turnaround time goes down, costs go down. Your central printer gets a break instead of a breakdown.

In theory.

Perhaps your own experience has been less than ideal. Because most remote printing systems aren't designed with enough control to manage a really heavy workload; there's no flexibility. No security measures, either.

But consider DPS by Memorex. The first Distributed Printing System with complete flexibility for the remote user, and complete control for the central site.

Why it's better.

For starters, installation is a matter of minutes, integrating perfectly into your MVS or VTAM System without modification and without an IPL.

Second, DPS will accept data from batch output, from a TSO data-set print command, or directly from user-written programs.

And the data stays confidential. You can assign specific or master passwords, and DPS will ignore any command that doesn't include your assigned code.

You can also specify that reports be printed on special forms (labels, checks, invoices, etc.).

Network control.

No matter how big the load, DPS keeps your system *manageable.* From either the central console or from remote terminals, you can enter commands such as start/stop, display, cancel, re-route, change copy count, priority, names or other attributes.

Data with a life of its own.

DPS keeps your reports safe from accidental erasure. You can print them or purge them, but DPS won't lose them, ever. Even after system error or failure.

Free 30-Day Trial.

We'll give you free installation and a 30-Day free trial to see how our system and your hardware can give you incredible printing performance.

Just call now (408) 987-9604, collect, or fill out the coupon below and send it *today!*

Remember—just because your current system falls short, doesn't mean you don't have a second chance. It just means you don't have DPS.

Memorex Corporation
San Tomas at Central Expressway, Santa Clara, CA 95052
ATTN: Software Marketing Manager, MS 1216

If DPS can think for itself, I'm interested in giving it some thought.

NAME:

TITLE:

COMPANY:

ADDRESS: STATE: ZIP:

TELEPHONE: EXTENSION:

MEMOREX
A Burroughs Company

'Omnicalc' Spreadsheet Program Gets Update

IRVINE, Calif. — Tower Systems, Inc. has announced a new release of its Omnicalc spreadsheet program for IBM CICS users. Omnicalc features a user-defined matrix for entering alphanumeric data with the associated program automatically updating all affected values as changes are made on the screen, a spokesman said.

The new release features multidimensional display support that adds a depth dimension to the matrix. Up to 255 planes of data may be defined and accessed. Each plane has its own spreadsheet, allowing similar applications to reside within the same matrix or cumulative totals to be gathered across applications, the company claimed.

Other enhancements include an expanded matrix size with more lines and columns and over 32,000 data entry cells. Numeric support has been expanded up to five decimal places on a global or cell-by-cell basis. Users may predefine the size of the matrix using a single command. Windowing allows the user to view more than one screen's worth or plane's worth of data.

A data base interface loads a new or existing matrix with any data, the spokesman said. User-defined profile support enables each user to define personal attributes such as programmed function key definitions and default matrix size. Redefinable hardware keyboard keys also allow Omnicalc to include password protection for individual matrices, as well as data encryption for the information they contain, according to the company.

Other new functions include user messages, program callable commands, cell indexing and GOTO statements. On-line Help screens are provided.

Omnicalc is available on IBM or compatible mainframes running IBM's DOS/VSE for $1,999 until the end of May from 19782 MacArthur Blvd., Irvine, Calif. 92715.

Screen Painter Package Aids Prime Cobol Programmers

HOUSTON — Interactics, Inc. has announced the availability of a screen painter package called Special Module for Application Screen Handling (Smash), said to enable Cobol programmers on Prime Computer, Inc. computers to develop on-line programs at an increased rate.

Smash reportedly can generate a complete on-line master file update of a Cobol program in minutes. From a standard Cobol "FD" file layout, Smash generates an internal data dictionary using the supplied picture clause for each individual field, the vendor said.

The programmer can then "paint" a screen while Smash, using the data dictionary, generates complete Cobol coding for the display, acceptance and off-line printing of fields on the screen, including single-layer subscripted fields. The generated Cobol code is loaded into the program via the standard copy statement.

Other features include generation of a complete program allowing up to five secondary keys; individual printing of screen images; adding, changing, deleting and browsing through records in a file; and automatic validation and decimal alignment of numerically defined fields.

Smash is available for a one-time license fee of $5,000, the vendor said from 7203 Marisol, Houston, Texas 77083.

Accent R Version Updated for DEC

CUPERTINO, Calif. — National Information Systems, Inc. has announced Version 7.30 of Accent R, a fourth-generation language for Digital Equipment Corp.'s Decsystem-10 and 20. Also unveiled was the first release of the Accent R Host Language Interface (HLI) and Menu, a system for developing interactive menus without writing programs.

Version 7.30 reportedly includes Qrep, a question/answer quick report writer, and offers interfaces to Marc Software International, Inc.'s Muse word processing system; SPSS, Inc.'s SPSS statistical system; Nyplan, Inc.'s Nyplan electronic spreadsheet; and National Computer Performance, Inc.'s Calc electronic spreadsheet.

The HLI reportedly enables upgrading of applications written in Cobol, Fortran or Macro to take advantage of the capabilities of Accent R. Existing applications can be upgraded by replacing data access routines with Accent R calls.

Menu reportedly allows an unlimited number of menus to be linked together to form a system.

The HLI costs $10,000/license, Menu costs $2,000, and Version 7.30 is free to existing installations with active maintenance contracts from Suite 130, 20370 Town Center Lane, Cupertino, Calif. 95014.

Unibase™ has 10X the power of conventional databases...plus UNIX* software.

Uniq Computer Corporation introduces Unibase, a powerful new concept in database management. More than a conventional software-based system; more than a single, limited use computer; Unibase combines the best of several worlds to give you a system that is truly unique.

You get multiple benefits in addition to exceptional power and UNIX Software.

- LOW COST. This extra database capability comes to you at about half the cost of conventional approaches.
- UNTAPPED POWER LYING DORMANT. Raw crunching power resides untouched in the host computer that comes with Unibase.
- EXPANDABLE FOR GROWTH. With Unibase you can share data with other computers...or add computers as the need arises.

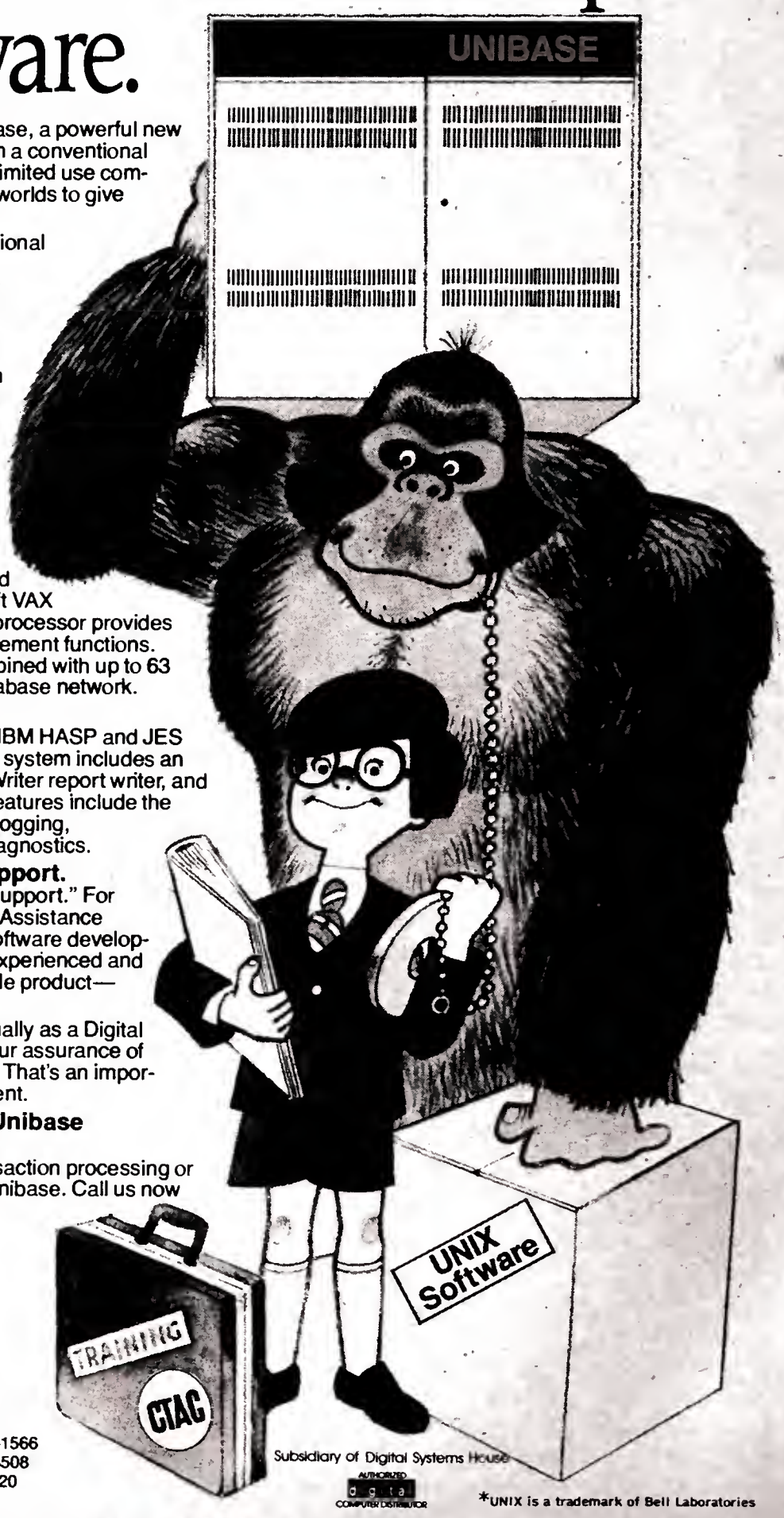
What exactly is Unibase?
Unibase is a complete relational database system, a combination of software and hardware. It consists of two processors, a host and a back-end. The host is DEC's powerful 32-bit VAX running UNIX System III while the back-end processor provides the real horsepower for handling data management functions. The complete integrated system can be combined with up to 63 additional hosts to form a shared-access database network.

More unique features.
Unibase systems can communicate with the IBM HASP and JES subsystems for mainframe data sharing. The system includes an interactive query language—IDL, the Easy-Writer report writer, and programming language libraries. Database features include the advanced relational data model, transaction logging, multiple security levels, and hardware self-diagnostics.

The real strength is single vendor support.
Uniq is another way of saying "unparalleled support." For hardware and software. Customer Technical Assistance (CTAC). Training. Enhancements. Custom software development and UNIX systems. Our staff is highly experienced and ready when you need us. To support the whole product—not just a part of it.

Also, rigorous financial screening, done annually as a Digital requirement for Authorized Distributors, is your assurance of dealing with a financially sound organization. That's an important consideration in protecting your investment.

For the rest of the story on the Uniq Unibase System, call or write for literature.
For greater speed and efficiency in your transaction processing or database management activities you need Unibase. Call us now for more details concerning this innovative approach to database management.



Only from Uniq

Uniq Computer Corporation
28 S. Water Street
Batavia, IL 60510 (312) 879-1566
Washington, DC (703) 448-8508
Santa Ana, CA (714) 541-5520

Subsidiary of Digital Systems House
AUTHORIZED digital COMPUTER DISTRIBUTOR

*UNIX is a trademark of Bell Laboratories

See Us At NCC Booth #8041/8043

More good news for these Fortunate 500.

A. E. Staley
Alcoa Australia
Alcon Laboratories
Allergan Pharmaceuticals
Allied Bancshares
Allied Chemical
Alusuisse
Amdahl
American Bell
American Can Company
American Cyanamid
American Financial
American Hospital Supply
American Motors
American Natural Service
American Pharmaseal
American Telephone & Telegraph
American Ultramar
AMP Italia
Anaconda
Anderson Clayton
Anglo American
Applied Power
ARCO
Arizona Electric Power
Arizona State University
Arkla
Arthur Andersen
Asesoria de Empresas
Asesoria Y Servicios GIS
Ashland Oil Company
Askgaard Olesen
Austen and Butta
Bahrain Petroleum
Banca Nazionale Dell 'Agricoltura
Banca Itau
Bank of Montreal
Bank of Nova Scotia Banpaid
Bankadati
Barclays Bank International
Batus
Bavaria
B.C. Coal
Beacon Oil
Bebidas Mundiales
Bechtel Power
Bectan Dickinson
Bell Labs
Bell of Pennsylvania
Bergen Bank
Best Products
B. F. Goodrich
Boral
Borregaard
Boston College
Boston Gas
Bowater
Bramalea
British Petroleum Australia
Brown and Root
Buckbee Mears
Burroughs
Business School of Oslo
Cable America
Cajun Electric Power Cooperative
Cal-Gas
Caltex Petroleum
Cameron Iron Works
Canadian Superior Oil
Canterra Energy
Carnegie-Mellon University
Celanese
Central Soya
CEPSA Petraleum-Spain
Cerveceria Cuauhtemoc
CF Industries
Champlin Petroleum
Charcan
Chemplex Campany
China Light & Power
Ciba-Geigy
Citinational Australia
City Utilities
Clemente Jacques
Clemson University
Coastal Corporation
CODELCO
COFIDE
College of William and Mary
Colonial Sugar & Refining
Colorado-Ute Electric Association
Columbia Gas System
Comalco
Combustion Engineering
Commonwealth Industrial Gases
Conoco
Consolidated Aluminum
Consolidation Coal
Consorcio Papelero Mexicano
Container Corporation of America
Contel Data Services
Continental Illinois National Bank
Control Data
Cooper Tire and Rubber
COPEC
Corporativa Coral
Cotonifica Cantoni
Cox Enterprises
Cray Research
Cryovac
Cullen Frost Bankers
Dairyland Power
Daon Development
Dart and Kraft
Dekalb-Pfizer Genetics
Delta Drilling
DePaul University
Detroit Edison
Digicon
Dillingham
Dome Petraleum
Dow Chemical
Dow Corning
Drazen-Brubaker
Dresser Industries
Dulux Paints
E.I. du Pont de Nemours
Duquesne University
Duval
Dyno Industries
Eastern Associated Coal
Eastman Kodok
Echlin Manufacturing
Ecole des Hautes Etudes
Ecole Nazionale des Mines
E G Leasing
Electro-Scientific Industries
Emerson Electric
Energy Cooperative
Energy Reserves Group
Engelhard Industries
Environment Canada
Enviratech
E. R. Squibb & Sons
ESCOM
Especializados Tecnico Adminstrativos
Farmers Home Administrotian
Farmland Industries
Farmos
FDB Sentralen
First City Trust
First Interstate Services
First National Bank of Midland
Fisher Price Toys
Florida State University
Fluor
FMC
Ford
Frito Lay
Functionality Group
Fundidora Monterrey
Gaffney, Cline & Associates
Garrett Automotive Products
Gas Research Institute
Gas Services
G. D. Searle
GEISCO
General Electric
General Instruments
Generol Mills
General Motors
General Sekiyu
George Washington University
GHK Companies
Giffard-Hill
Gilborco
Gold Kist
Golden West Broadcasters
Goldstan
Great Northern Nekoosa
Great Solt Lake Minerals
Group Cockerill-Sombre
Grupa Chihuahua
Grupa Condumex
Grupa Cydsa
Grupo Lamosa
Grupa VISA
GTE Automatic Electric
Guardian Industries
Guernsey & Associates
Gulf Air Company
Gulf Energy & Development
Gulf Oil Englond
Halliburton
Hallmark Cards
Hamilton Bank
Handelsakademiet
Harris Corporotion
Harte-Hanks
Harvord University
Howaiion Electric
HDR Systems
Health Care Service
Hebrew University
Helsinki School of Economics
Hercules
Hiram Walker Resources
Hoffmann-LaRoche
Holiday Inns of Americo
Hamart Development
Home Federal Sovings & Loan
Home Oil
Home Petroleum
Homestake Mining
Honeywell
Hughes Helicopter
Husky Oil
Hydro Quebec
ICA Service
Imatran Voima Oy
Indal
Indiana University
Industrias Monterrey
Ing. F. Selmer
Inmont
Inspiration Consolidated Copper
Intecom
Inter First of Texas
InterNorth
Interversa
Iona College
ISCOR
ISS Dota
I. T. E. S. M. Monterrey
ITT North Telecommunications
Jenning Industries
Jones & Laughlin
Joseph E. Seagram & Sons
Kansas City Power and Light
Kelsey-Hayes
Kennecott Minerals
Kentile Floors
Kimball International
Komplek Kewangon
Kongsberg Vaapenfabrikk
Kreditkassen Bank
Kroger Company
Kroy
Kvaerner Engineering
Londsorganisotionen
La Quinta Motor Inns
Leaseway
Lego Systems
Lend Lease
Libbey-Owens-Ford
Liberty Mutual Insurance
Lincoln Electric Systems
L. M. Berry
Loma Negra
London Transport Authority
Lonza
Louisiana Land & Exploration
Louisville Gas & Electric
Lowes Companies
Magmo Copper
Manitoba Data Services
Monufacturers Hanover Trust
Manufacturer's Notional Bonk
Mapco
Marine Midland Bonk
Mark Producing
Marquette University
Marriott Carparation
Marsh and McLennan
Mary Kay Cosmetics
Matra Harris
McGraw Edison
McGrow Labaratories
McKinsey and Company
Mead Corporation
Memorex
Merck and Company
Mercury Marine
Mesa Petraleum
3M
Mobay Chemical
Mobil Oil
Modern Merchandising
Molson Companies
Monsanto
Moog
Multi National Investment
Multibanca Comermex
Murray Financial
Mutual Hospital Insurance
Nabisca Brands
National Car Rental
National Semiconductor
Natural Gas Pipeline
Naturgas Syd
NEBB Norway
Newmont Mining
NEUCC
New Orleans Bank
New Zealand Industrial Gases
Nicor
NKI Skolen
Noronda Mines
Norcem
Norges Handelshoejskolen
Norges Shipforsknings
Norske Olje
Norske Skog
North American Coal
North Carolina Municipol
Northeastern University
Northern Trust
Northwest Pipeline
Norwegian Carribean Lines
Norwegian Pulp & Paper Institute
Novo, on Alberta Corp
Oak Industries
Ohio State University
Oklahoma Gas and Electric
Omega Barfel
Ontario Hydro
Ontario Ministry of Government Services
Owens-Corning Fiberglos
Pace Financial Management
Pacific Resources
Packaging Carporation of America
Pan Canadian Petroleum
Panhandle Eastern Pipe Line
Paris Chamber of Commerce
PCA International
Peabody Coal
Pepsico
Perstorp
Pertamina
Peter Kiewit Sons
Petro Canada
Petro-Lewis
Petro Peru
Petroleum Corporation of New Zealand
Phillips Petraleum
Pigmentas Y Oxidos
Pizzo Hut
Polaroid
Polysar
Ponderasa Industrial
Portland General Electric
Price Waterhouse
Prime Computer
Public Service Board of New South Wales
Public Service Co. of Colorado
Purdue University
Quaker Oats
Racal-Milgo
Rainier National Bank
Rolston Purino Company
RCA
Reading and Bates
Ready Mix Concrete
Reliance Electric
Rentca Eurape
Republic Bank of Texas
Reserve Mining
Rexhom
Rice University
Rochester Telephone
Rockwell Internotianol
Rohm and Haas
Rollins
Royal Baskalis Westminster
RUNIT Technicol School, Norwoy
Rutgers University
Sabritas
Sade
Salamon Brothers
Samaritan Health Service
Sontos
Sao Paula Alpargatos
SAS Catering
Saskatchewan Oil and Gas
S. C. Johnson and Son
Seafirst Leasing
Seattle First Notional Bank
Serma
Service Merchandise
Servicios Corporativas
Servicios Interindustrias
Servicios Liverpool
Shaklee
Shell
Shultan Canada
Sigma Motor
Signetics
Social Security Administration
Southern Methodist University
Southland Corporation
Southwest Bancshares
Southwestern Public Service
Souza Cruz
Sta-Rite Industries
Standard Bank Investment
Standard Oil of California
Standard Oil of Florida
Standard Oil of Indiana
Standard Oil of Ohio
State of Louisiana
State of Texas
Stare Nardiske Telegrof
Stroh Brewery
Studsvik Energiteknik
Sugar Bowl Gas
Superior Oil
Syracuse University
Technical Research Centre
Technische Darmstadt
Tenneca
Tesoro Petroleum
Texas A & M University
Thomas and Betts
Tiger International
Topeko Land
Taranta International Airport
Toya Engineering
Tracor
Trane
Trans-Canada Pipelines
Transco Energy
Trovenol Laboratories
Tricentral
Trilagy Systems
Triumph Adler
Tulane University
UCLA
Ultramar Canada
Ultramar Golden Eagle
Unibanco
Unicorb Industrial
Union Bank
Union Carbide Corporotion
United Breweries
Universidad de Chile
Universita di Padova
University of Arizona
University of Calgary
University of Chicoga
University of Colarada
University of Florida
University of Georgio
University of Hawaii
University of Houston
University of Idoha
University of Iawa
University of Monitoba
University of Massachusetts
University of Michigan
University of Minnesata
University of Missauri
University of Nebrasko
University of North Carolina
University of Texas
University of Virginia
University of Washington
University of Wyaming
Urban Development Authority
U. S. Bancarp
USC
USDA
U. S. Fidelity & Guarantee
USI Capital and Leasing
U. S. Steel
U. S. Telephone
Valera Energy
Valley National Bank
Valares Corporativas
Vesta Hygaea
Vitra Carparativa
Volkskas Group
Valkswagen of America
Vought
Warner Communications
Weingarten Realty
Welltech
Western Company of North America
Westinghouse
Westpac Banking
Wharton School
White Martins
Wilh. Whilhelmsen
Williams Campanies
Wilson Learning
Wimpey of Canada
Woods Gordan
W. R. Carpenter
W. R. Grace
Xerox

Introducing IFPS/Personal. Decision Support System software uniting personal computers with mainframes.

Users in the organizations listed here can now achieve an unprecedented level of problem solving and decision-making support.

These companies already have the Decision Support capabilities of mainframe IFPS. With IFPS/Personal, they can extend those capabilities to the desktop. IFPS/Personal uses the same standard modeling language as mainframe IFPS—a language that lets managers describe complex business problems in their terms, not in technical jargon.

IFPS/Personal is the first DSS software package optimized for the personal computer, and we give it the same level of support our mainframe users enjoy now. That means that no other DSS software is better suited for the Information Center.

Become one of the fortunate 500. Call or write us today. Execucom Systems Corporation, 3410 Far West Boulevard, Austin, Texas 78766. **1-800-531-5038** or in Texas and Canada call 512-346-4980.

EXECUCOM

'Titus' Serves Honeywell System

Technalysis' Packages Extend Power of TPS 6

FALLS CHURCH, Va. — Technalysis Corp. has released two utility packages said to extend the power of Honeywell, Inc.'s transaction processing system (TPS) 6 on Honeywell's Level 6 or DPS 6 computers.

Technalysis Integrated TPS 6 Utility System (Titus) is a general-purpose data base administrator utility that provides any TPS 6 user with absolute control over his TPS 6 Integrated File System data base, a spokesman said. Titus assists in creating and loading controlled, low-volume test records from any screen.

On-line inquiry and modification is allowed on any record, file or chain during the verification phase of program testing. Titus walks data base chains at the screen. If any broken chains occur during program test, the package helps locate and fix the problem without releasing the entire file.

TPS 6 Utility Report Facility (Turf) is a general-purpose menu-driven report writer that leads users through the creation of their reports. Turf prompts for field selection, processing and format requirements, the spokesman said.

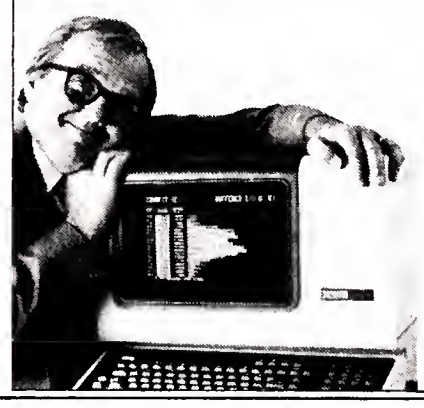
Once the report has been saved, the user can direct Turf to run a report immediately or later. The output print file can be directed by the user to hard-copy print or browse at the screen. The user can perform arithmetic operations, break control subtotaling, cross footing, sorting, automatic report formatting and special flag processing.

Titus and Turf run under Honeywell's Gcos 6 MOD 400 operating system and TPS 6. A one-time licensing fee is $10,000 for Titus and $8,500 for Turf from Technalysis, 7700 Leesburg Pike, Falls Church, Va. 22043.

VAX SOFTWARE!

PACS™ with EZLOG™ is today's standard in:

Resource Accounting
Performance Monitoring
Internal/External Billing
Project-Based Accounting



PACS has been accepted into Digital's EAS Library.

Signal Technology, Inc.

5951 Encina Rd., Goleta, California 93117 (805) 683-3771
Outside California Call Toll Free (800) 235-5787

VAX is a registered trademark of Digital Equipment Corporation

SCS Data Base Library Backs Nova, Eclipse

BELLEVUE, Wash. — Small Computer Systems, Inc. (SCS) has introduced A Database Library (Adlib), a series of software products designed to support hierarchical, shared data bases and high-transaction throughput on Data General Corp. Nova and Eclipse systems running under DG's Rdos.

The product line includes the following:

- Adlib — a high-level, dictionary-driven, data base programming language compiler.
- Window-Mapped Adlib Executive (WAX) — an extended memory executive.
- Mapped Adlib Executive (Multex) — a smaller executive for mapped systems without extended memory that will run in standard Rdos 64K-byte address space and support up to four printers and any number of terminals.
- Multitask Interactive Text Editor (Mite) — a word processor for editing programs and documentation that can be used on either executive or any terminal.

Also, numerous applications such as Wholesale Distribution and Material Requirements Planning are available under Adlib.

A minimum runtime package costs $3,000; a minimum development package costs $6,000, the vendor said from Suite B-48, 13400 Northrup Way, Bellevue, Wash. 98005.

Expanding your system 34/38 network?

Save with

PROTOCOL CONVERTERS

ASCII CRT's and printers replace 5251 Model 11/12 terminals, ASCII printers replace 5256's.



- Reduce Leased Line Costs
- Reduce Terminal Expenses
- Increase Network Efficency
- Provide Transparent Dial-In Support

Also available:
1067N. ASCII to SNA/SDLC 3767 (PU Type 1), 71B/SNA 3271 Bisync to SNA/SDLC 3274, 1071 ASCII to Bisync 3270, 1076 ASCII to SNA/SDLC 3276

Newcomp Products, inc.

45 COMMERCE DRIVE • ASTON, PENNSYLVANIA 19014

CDLA Member Computer Dealers & Lessors Association

800-345-8278
IN PENNSYLVANIA (215) 485-8180.

VAX-11 Version of 'Ibis' Released By Tymshare

CUPERTINO, Calif. — Tymshare, Inc. has released a Digital Equipment Corp. VAX-11 version of its International Banking Information System (Ibis).

Ibis is an on-line trading system that the vendor claims is fully integrated with a bank's international operations.

International finance areas covered include foreign exchange, money markets, commercial loans, precious metal trading, general ledger, central information file, letter of credit and financial futures.

Other areas are the Complex Systems, Inc. Chips and Swift systems for tracking paying and receiving and the Vostro/Nostro system for demand deposit accounting. Each module can function independently or all can be operated on a fully integrated system, the vendor said.

Ibis maintains and tracks information relevant to the global position of a bank's clients in the areas of money markets, foreign exchange, commercial loans and letters of credit. It provides instant credit limit positions and online yields, according to the vendor.

The modules cost from $100,000 to $200,000 from Tymshare, located at 20705 Valley Green Drive, Cupertino, Calif. 95014.

List Profiles Net Packages

CHERRY HILL, N.J. — Data Decisions, Inc. has released a directory that profiles 317 communications andnetworking software packages from 81 vendors. The directory includes packages offered for all major mainframes and minicomputers as well as for major business microcomputers.

The survey covers local and remote terminal-configuration planning programs, teleprocessing monitors, screen development aids, access/security control facilities, remote job entry software and network design/analysis/control packages.

The directory (Report 6-BP) costs $25 from Data Decisions, 20 Brace Road, Cherry Hill, N.J. 08034.

THE INFORMATION ANALYSIS SYSTEM THAT WON'T PLAY A BIT PART.

Some software systems are like walk-on actors; they're usually kept standing offstage. But not SPSS^{X}.™ Because SPSS^{X} offers everything you need to organize, summarize and display information in scores of productive ways. It's a totally new Information Analysis System which we've designed with the most advanced statistical capabilities yet. To play a leading role in any DP or Information Center environment.

Want to enhance efficiency? With minimal training, anyone in your organization can start using SPSS^{X} to get the critical information they're after. In the time it takes users to explain a problem to a programmer, they could be obtaining answers and putting them to work. Permitting the programmer to devote more time to other applications.

Need advanced file management capabilities? SPSS^{X} lets you define and combine data from any number of files, regardless of complexity or structure.

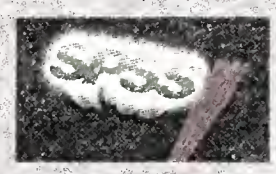
Searching for sophisticated statistics? Over 50 major statistical procedures are at your command, from simple table and plot procedures for novice users to state-of-the-art multivariate techniques for more sophisticated users.

Interested in evaluating computer performance? SPSS^{X} gives you the power to read and analyze SMF and RMF type data, and to turn this system performance information into concise, understandable reports.

These are just a few of the many capabilities that make the SPSS^{X} Information Analysis System such an incredibly productive performer. For more information, call or write for our descriptive brochure today.

© Copyright 1983, SPSS Inc.

PRODUCTIVITY RAISED TO THE HIGHEST POWER™

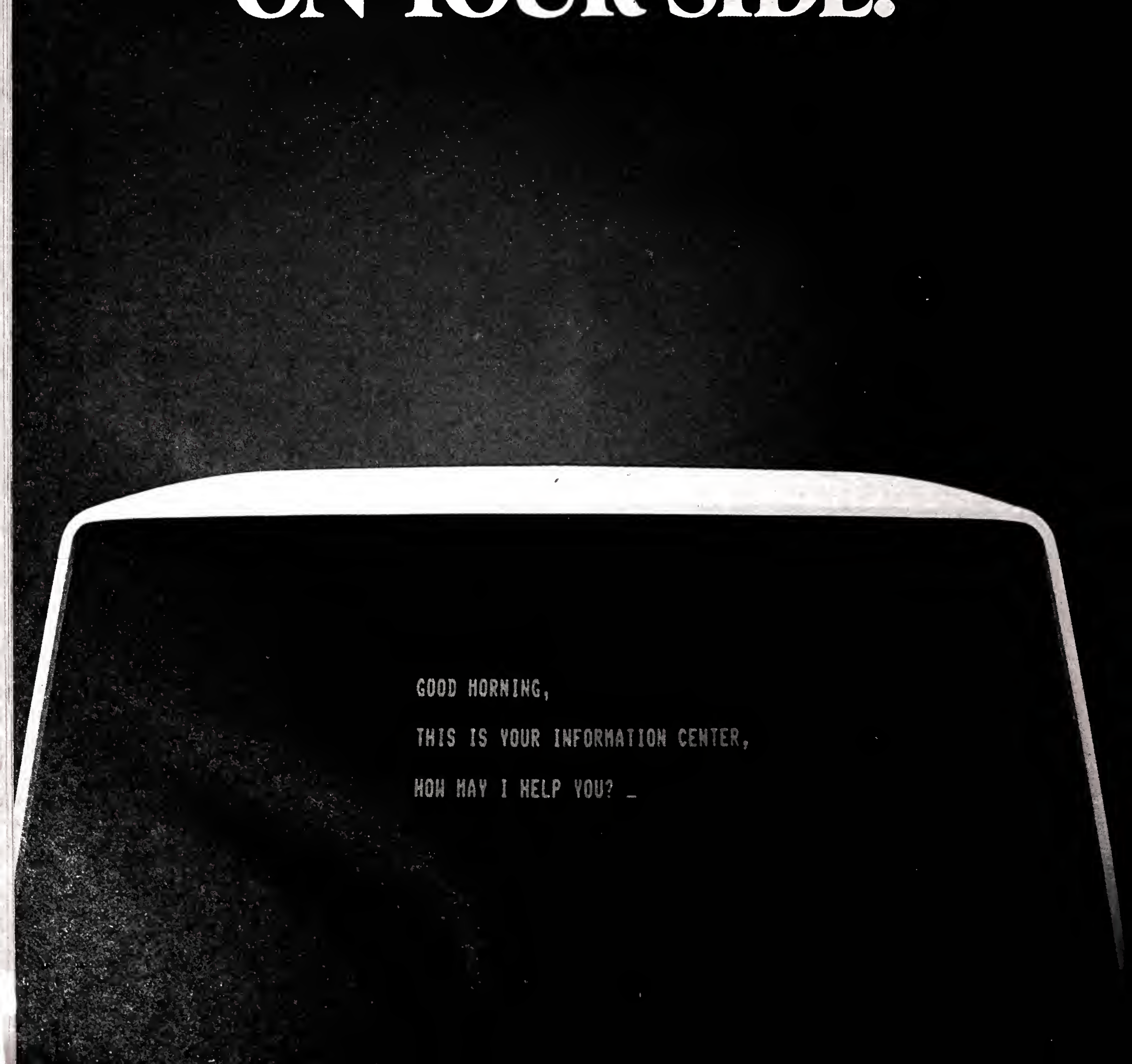


SPSS Inc. 444 N. Michigan Ave. Chicago, Illinois 60611
(312) 329-2400

SPSS^{X} currently runs on IBM OS, CMS and Digital VAX™ systems. Conversions will soon be available for IBM DOS, DEC 10 and 20, PRIME, Univac 1100, Data General MV 8000 series and other minis and mainframes.

Photographed at IBM Data Center, Chicago, IL

HOW TO GET USERS OFF YOUR BACK AND ON YOUR SIDE.



The answer is in front of you.

SYSTEM 2000.®

Intel's Database Management System.

And iDIS.™

Intel's Database Information System.

Together, they allow your corporate decision makers to gather all the information they need.

From your information center data base.

Not from their personal computer.

And users get their data from a terminal. Right in their office. Right on their desk. In seconds.

Versus the days it might take you, just to get to their request. Days that can seem like weeks.

Especially when management is breathing down your neck.

iDIS is a fully integrated, XENIX* based, multi-user microcomputer system. Featuring the Intel 86/735 microcomputer-based system. The most versatile, most powerful 16-bit system on the market.

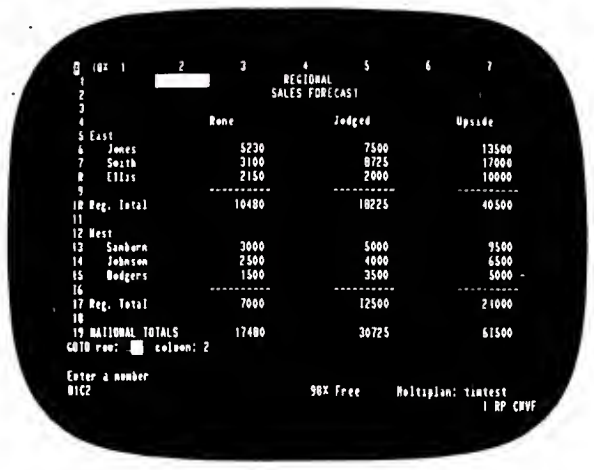
Industry-standard VLSI and peripheral technology are also designed-in, to protect your long-term investment.

And to protect your information from unauthorized use, iDIS maintains complete data security at every terminal.

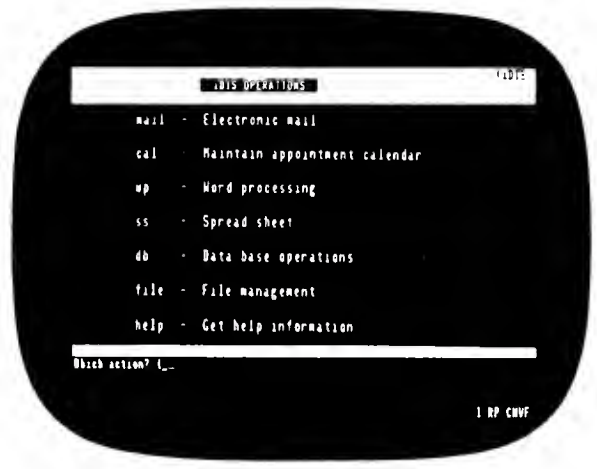
iDIS gives users the ability to perform local database definition and creation, as well as updating and reporting.

But iDIS doesn't stop there. Users also get a wide range of software, to aid them in planning, analysis and office management.

iDIS even has tools for data processing. By using the XENIX command interpreter, menu/forms and conventional programming languages, programmers can create custom applications for users.



Credit our spreadsheet, with quick numbers directly from the corporate data base.



For ease-of-use, our menu format is made-to-order.

Faster than management can send you a data request.

And while iDIS is helping you, SYSTEM 2000 will be helping users to help themselves.

By creating greater user self-sufficiency and increased productivity. Producing better control of information, for higher quality decisions.

Call us toll-free, for more information. (800) 538-1876. In California, (800) 672-1833.

Or write us. Lit. Dept. H 14, 3065 Bowers Avenue, Santa Clara, CA 95051.

Or contact the Intel Sales Office nearest you.

We'll back you, with all the support you'll need.

To get users on your side.

*XENIX is a trademark of Microsoft, Inc.

intel® delivers solutions

See us at NCC, Booth #3910.

Micronotes

Information Builders, Inc. has unveiled a version of its Focus data base management system and fourth-generation language for the IBM Personal Computer. Called PC/Focus, the package is said to offer identical functionality in both its IBM mainframe and Personal Computer versions.

PC/Focus will be released in three stages, beginning in spring 1983. The first version includes a report generator, dialogue manager, Focus file browsing capability, user vocabulary, Help facility, text editor and file transfer facility. The second version, targeted for summer 1983, will add the Fidel Full-Screen Manager, data base management and graphics capabilities. Set for fall 1983, the third version of the product will add formal statistical analysis, financial modeling and distributed processing functions. PC/Focus is said to enable multiple users to access and/or update a mainframe-stored data base simultaneously.

PC/Focus is supplied as a combination of software and the PC/Focus Accelerator Board, which provides an additional 512K bytes of random-access memory (RAM). It requires at least 256K bytes of RAM and a hard disk of at least 5M-byte capacity. If the Intel Corp. 8087 chip is installed in the user's Personal Computer, the system will automatically make use of it to increase the speed of heavily arithmetic reports.

PC/Focus will be available June 1, priced according to current configuration and quantity. For users that have mainframe Focus installed, the price for one copy is $2,200 plus $750 for the accelerator board. For nonusers of mainframe Focus, the price is $2,600 plus $750 for the board. Quantity discounts are available, the vendor said from 1250 Broadway, New York, N.Y. 10001.

North America Mica, Inc. has announced the availability of its Critical Path Project Management and Resource Management Systems, PMS-II and RMS-II, on 16-bit microcomputers running under the Digital Research, Inc. CP/M 86 operating system in the CBasic-86 language. The software will schedule projects based on 3, 4, 5, 6 or 7 workdays per week; start on any day of the week omitting up to 100 user-defined holidays of any length; maintain budget and actual costs; and report the project on an "actual start/finish," "percent complete" or "days remaining" basis. PMS-II costs $1,295, and RMS-II costs $995 from Suite 100, 11772 Sorrento Valley Road, San Diego, Calif. 92121.

Video Tape Presentation Teaches 'Visicalc' to Users

NEW YORK — Micro Learning Concepts, Inc. has introduced "Learning Concept: The Visicalc Program," a video tape learning presentation designed to teach microcomputer end users how to set up and utilize Visicorp's Visicalc package in less than an hour.

The 58-min. tape guides the user through the Visicalc program step by step. In addition, there is a 32-page Quick Reference Guide which contains reference charts and in-depth summaries of all Visicalc commands.

The video tape for the Visicalc program is comprised of three segments. The initial segment familiarizes the user with the IBM Personal Computer and explains preparation of the Visicalc program and data diskettes.

The second segment teaches the user to build a simple spreadsheet. The final segment teaches how to modify a simple spreadsheet to exact specifications.

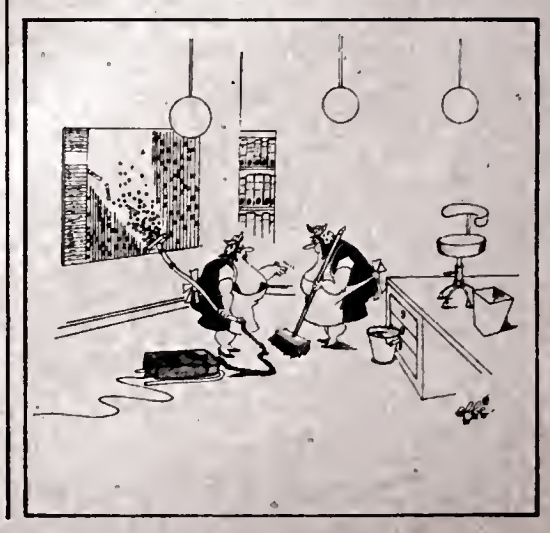
The full package, including video tape and reference guide, retails for $129.95, the vendor said from Suite 530, 120 E. 56th St., New York, N.Y. 10022.

Project Tool Fits HP 3000 Series

SANTA CLARA, Calif. — Computer Resources, Inc. has announced that its computerized project management system, Projectalert, is now available for Hewlett-Packard Co. HP 3000 series computers operating under the Multi-Programming Executive operating system..

Designed around a relational data base management system for use by nontechnical personnel, Projectalert reportedly is completely menu driven and provides an automatic system for planning, scheduling, monitoring and controlling all types of projects.

Features include on-line data entry, resource allocation, cost and labor tracking, color graphics, Gantt charts and network libraries. The basic system is available at an introductory price of $12,000, the vendor said from 5333 Betsy Ross Drive in Santa Clara, Calif. 94054.



Built-In Beats Bolted-On

Braegen's Way Puts True 16-Bit Personal Computing Inside A Low-Cost, 3274-Compatible Cluster Controller.

Several companies now offer personal computing capability as part of their 3270 terminal package. Their approach, however, has built-in problems—primarily because the personal computing *isn't* built-in, but just bolted on.

Braegen's way works better. Because our new 8410 Cluster Controller features integral personal computing, the user gets maximum processing versatility and performance while the DP Manager gets maximum control and cost savings.

More Versatility And Power. You can attach up to eight ergonomic display stations to the 8410—and with one keystroke turn them all into true 16-bit PCs. You can access a wide range of applications software operating under MP/M-86. And you can upgrade from 128 to 640 Kb of RAM—or integrate a 10-Mb Winchester drive for optimum multi-user response and security.



More Control And Economy. Undoubtedly, it is the control you gain and the dollars you save that really distinguish the 8410. Because the PC capability is integrated into the controller, each user is tied into the overall corporate communications network—giving the DP Manager control over critical computer resources.

Just as important is the considerable cost control achieved. First, the 8410 *starts* as a more cost-effective alternative, even operating only as a 3274 remote cluster controller. But by adding multi-user PC capability, the 8410 can save you thousands of dollars—and a lot of space—in equipment alone. There's no investment in additional software for each workstation, or in additional communications lines. Expensive resources—such as letter-quality printers and Winchester drives—can be shared. And a unique remote-maintenance feature that lets our Field Engineers dial up and diagnose the 8410 from any location reduces down-time costs.

For ten years now, Braegen's way has worked for an impressive base of customers. The 8410 with integral personal computing; its low-cost counterpart, the 8400 Remote Cluster Controller with up to 16 attachments; as well as our nationwide sales and service network are just three persuasive reasons why.

Put Braegen's way to work for you. Call or write The Braegen Corporation, 20740 Valley Green Drive, Cupertino, CA 95014 (408) 725- 1252; TWX: 910-338 7332.

BRÆGEN

Developers Can't Deliver, Exec Says

Videotex/Teletext Assailed for Promises

By Phil Hirsch
CW Washington Bureau

NEW YORK — Videotex/teletext developers have promised far more than they can deliver, according to Dr. Walter Ciciora.

Ciciora, who spoke at a videotex/teletext seminar here, is vice-president for research and development at American Television and Communications, Inc.

He has been suggesting for a long time that the videotex/teletext standards battle is based more on a struggle for market share than on technical necessity. By installing conversion software in network gateways, he explained, terminals designed for one standard can communicate with data bases implementing the other standard.

At last week's seminar, which was sponsored by Technology Transfer, Inc., a Santa Monica, Calif., telecommunications consulting firm, Ciciora said cable TV networks are unlikely to offer two-way videotex services for years. The videotex system being touted by AT&T costs far too much to become a mass market product, and broadcast teletext is not viable either, he commented.

'Although Federal Communications Commission rules state that all new cable TV systems must have two-way "capability," no one is manufacturing the equipment needed to put two-way systems on the air . . . That is because most cable system operators are heavily in debt.'

Regarding the prospects for operating videotex services on cable networks, Ciciora pointed out that less than one-quarter of one percent of all U.S. cable TV networks now provide two-way service. In five years, it will be no more than 6%, he said, adding that the development of commercial services that require two-way cable networks is rather unrealistic.

Although Federal Communications Commission rules state that all new cable TV systems must have two-way "capability," no one is manufacturing the equipment needed to put two-way systems on the air, Ciciora reported. That is because most cable system operators are heavily in debt, according to attorney Richard Neustadt, another speaker at the seminar.

Regarding broadcast teletext, Ciciora said the services now being offered by CBS and others do not have enough information storage capacity. That is because they use the "vertical blanking interval" — the space separating the frames of a standard TV program. This scheme limits the teletext data base to about 150 pages, he pointed out.

Using a full TV channel — cable or ether — allows expansion of the data base to about 5,000 pages, Ciciora explained. But there is another problem. Teletext will

(Continued on Page 64)

Distributed Processor Unveiled For Smaller Sperry 1100 CPUs

BLUE BELL, Pa. — Sperry Corp. has unveiled a distributed communications processor designed for smaller Sperry Series 1100 host computers.

The DCP/10 is also said to function as a low-cost network processor or remote concentrator. It is capable of simultaneously supporting transaction processing, timesharing, remote job entry and distributed processing applications, a spokesman said. The memory for the unit is an integrated, error-correcting storage system of 512K bytes.

Three main components make up the DCP/10 hardware: a processor, local storage and communications lines modules. They come together in a 19-in. enclosure that can be mounted in an existing communications cabinet or delivered in a cabinet tailored for the DCP/10.

It accommodates asynchronous, synchronous and wideband transmissions at speeds up to 64K bit/sec.

A DCP/10 used as a front-end processor, including three synchronous lines, four asynchronous lines, 512K bytes of storage, a freestanding diskette storage subsystem and a host interface channel costs $33,542. The five-year lease terms are $768/mo plus monthly maintenance of $183. The unit will be available during the first quarter of 1984.

Sperry Corp. is located in Blue Bell, Pa.

Tymnet Certifies Eight X.25 Products

MIAMI BEACH, Fla. — Tymnet, Inc. has announced the certification of eight X.25 products that meet the qualifications of Tymnet's certification program.

The vendors whose X.25 products are newly accepted by Tymnet are: Computer Sharing Services, Inc.; Micom Systems, Inc.; the University of Utah; Wang Laboratories, Inc.; Xerox Corp.; Associated Computer Consultants, Inc.; Memotec; and Gandalf Data, Inc.

Tymnet is located at 2710 Orchard Pkwy., San Jose, Calif. 95134.

Sytek Adds Localnet Monitor

MOUNTAIN VIEW, Calif. — Sytek, Inc. has announced a statistical monitor that is said to provide network managers with digital, analog, interface and power data for monitoring a Localnet channel.

The Localnet 50/120 statistical monitor is for managers who use Sytek's multichannel broadband local-area network. It is said to analyze data traffic on a single channel — one of 120 — of the Localnet network. Using the monitor, managers will be able to observe traffic statistics on the system, monitor network conditions and optimize network traffic, Sytek said.

The Localnet 50/120 is a passive device that connects to the network via an RS-232C interface, either as a stand-alone device or in conjunction with the Localnet 50/100 network control center.

The monitor sells for $1,895 from the vendor at 1225 Charleston Road, Mountain View, Calif. 94043.

CLIP AND RETURN FOR FAST RESPONSE

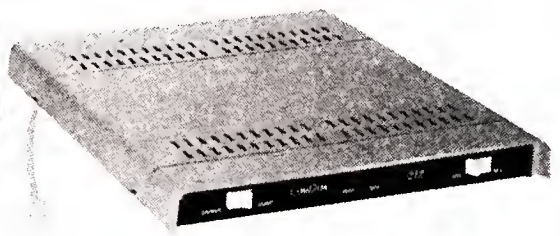
300 BAUD
103A COMPATIBLE



☐ MODEL 305E2-12 $147

MODEMS
WITH ALL THE FEATURES YOU NEED
FULL DUPLEX EIA RS232C INTERFACE
INTEGRAL VOICE / DATA SWITCH ALLOWS USE WITH ANY MODULAR TELEPHONE
CAN BE USED ON DIAL NETWORK OR TWO WIRE PRIVATE LINES
212A HAS MANUAL ORIGINATE / ANSWER SWITCH; 103A IS ORIGINATE ONLY

1200 BAUD
212 A COMPATIBLE



☐ MODEL 212E2-32 $377

☐ Acoustic Couplers ☐ Models ☐ Line Drivers ☐ Accessories
☐ Statistical Multiplexers ☐ Protocol Converters

Please check items of interest and return to us for additional information

ComData
We can get you there from here.
7900 N. Nagle
Morton Grove, IL 60053 312/470-9600
New York 212/690-7727
Los Angeles 213/622-0334
member of IDCMA

name _____
company _____
street _____
city _____ state _____ zip _____
telephone _____ ext. _____

Software Routine Provides Security for HP Terminals

KELLER, Texas — Related Computer Technology (RCT) has unveiled Bouncer/3000, a software routine said to provide log-out control of all terminals in Hewlett-Packard Co. HP 3000 systems, to eliminate automatically interruptions during backup sessions.

The routine reportedly recognizes users who are authorized operators, while warning unauthorized personnel against continued use of the system. Automatic abort takes place following the warning if proper authorization is not shown.

A demonstration tape of Bouncer/3000 is available for $100, and a source tape of the program costs $1,000, according to the vendor. RCT is located at 154 S. Main, Keller, Texas 76248.

Videotex Hit For Pledging Too Much

(Continued from Page 63)

not be able to reach a mass market until somebody comes up with a decoder priced at no more than $50. The British are closest to this goal, he said, but they are still far from it.

According to Ciciora, a decoder implementing the Prestel display format can be purchased in this country for $300 to $600. Also, the British system provides poor graphics, and that is likely to discourage advertisers whose participation is necessary if teletext systems are to turn a profit.

AT&T's Presentation Level Protocol (PLP) display scheme provides handsome graphics, but the decoder costs far more. It appears that it will be some time before PLP decoders become cheap enough to support the kind of market the phone company has been talking about.

AT&T, in collaboration with Knight-Ridder Newspapers, is scheduled to begin offering a commercial videotex service next fall in Miami that will feature PLP-based terminals. Gary Arlen, who publishes a newsletter devoted to videotex/teletext, said at the seminar that AT&T's PLP decoder will be sold to viewers for $595, but is costing the phone company an additional $500.

Ciciora claimed the gap is even larger. He reported that Norpak, Ltd., a Canadian manufacturer, is now producing a decoder that uses circuit boards rather than silicon to implement PLP, and the price is $1,500 per unit.

Ciciora said he recently obtained the following price quotes from one manufacturer who is planning to build chip-based PLP decoders later this year: For the first 5,000 units, the price will be $1,250 each; for the next 5,000 to 10,000 units, $800 each; and for the next 10,000 to 100,000, $550 each.

Aside from high decoder costs, telephone-based videotex services face the prospect of rising communications charges, Ciciora said. Metered local telephone service, now established in some cities, will almost certainly spread as the divested Bell operating companies seek new sources of revenue, he pointed out. By comparison, cable-TV-based systems offer free transmission.

Multiplexer Fits DEC Micro

ANAHEIM, Calif. — Sigma Information Systems has announced the SCD-DZV11, a dual-width asynchronous eight-line multiplexer for Digital Equipment Corp. LSI-11 Q-bus systems.

The multiplexer can support RS-232C terminals or remote lines and plugs directly into the Q-bus slot in a LSI-11, the vendor said.

The multiplexer emulates the DEC Unibus DZ11 eight-channel multiplexer and has jumper-selectable address and vector assignments. The SCD-DZV11 has modem control and programmable speed for character length and stop bits, the vendor said.

Included with the SCD-DZV11 are two cables with 40 pin berg to four 25 pin RS-232C female connectors, the vendor said.

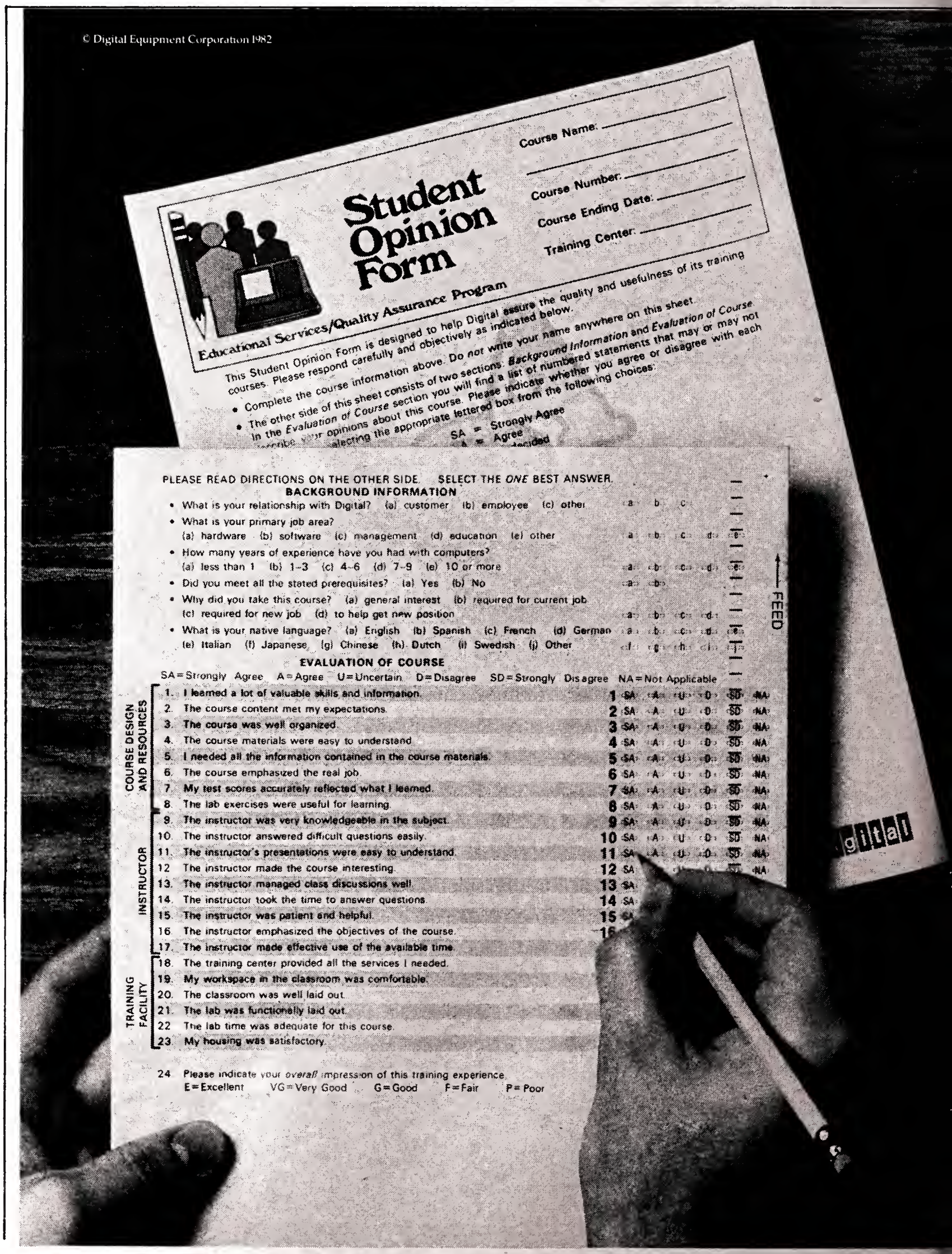
The SCD-DZV11 costs $715. The vendor makes other LSI-11-compatible products including disk controllers, print controllers, multifunction boards, communications interfaces and system enclosures. The vendor is located at 6505 Serrano Ave., Anaheim, Calif.

Data Entry System Updated

PRINCETON, N.J. — Mathematica Products Group, Inc. has announced enhancements for its online data entry system.

Enhancements include the elimination of repetitive keying through advanced support of the "Dup" key, format copying for multiple uses of developed screens and enhanced security including the ability to modify previously assigned security codes at any time, the vendor claimed.

The system is designed for full-screen automatic data entry using IBM 3270-type terminals and for IBM mainframe computers in the DOS, DOS/VS and DOS/VSE environments. DES costs $8,000 or $208/mo for 60 months from the firm through P.O. Box 2392, Princeton, N.J. 08540.



Data Bits

Color Graphics Terminal Offered by Jupiter Systems

BERKELEY, Calif. — Jupiter Systems, Inc. has announced the Jupiter 7 Plus, a color graphics terminal with a 13- or 19-in. screen.

The terminal contains eight 1K-by 1K-byte memory planes and can display 256 colors simultaneously out of a palette of 16.7 million, the vendor said.

The terminal was designed for use in very large-scale integration, mechanical design and printed circuit board design, according to the vendor.

A terminal with a 13-in. screen and 768-pixel by 585-pixel resolution costs $15,200.

A 19-in. model with a 1,024-pixel by 780-pixel resolution costs $19,000, Jupiter Systems said from 2126 Sixth St., Berkeley, Calif. 94710

'DL 3270' Allows Datalynx To Tie IBM Micro to CPU

TORRANCE, Calif. — Local Data, Inc. has announced a software package which allows users of IBM's Personal Computer to use Local Data's Datalynx protocol converters to link the Personal Computer to IBM mainframes.

Called the DL 3270, the package is stored on a 5¼-in. disk drive and enables a Personal Comptuer to emulate an IBM 3278 binary synchronous display terminal when connected to a Datalynx/3270 or Datalynx/3274 protocol converter on a dedicated RS-232C serial port, the vendor said.

The package costs $60 for the first user and $30 for each additional package, the vendor said from 2701 Toledo St., Torrance, Calif. 90503.

Communications Option Out for System 830 Micro

TUSTIN, Calif. — Sumicom, Inc. has introduced a communications option for its System 830 business personal computer.

The option allows users to tap into on-line data bases such as Source Telecomputing, Inc.'s The Source and Compuserve Information Service. It also allows users to send and receive telex and TWX messages through RCA Corp.'s global communications service.

The option consists of software and an internal modem. The 830 is a self-contained system that includes a CPU, printer, disk memory, terminal and keyboard.

The communications option is priced at $995 from Sumicom at 17862 E. 17th St., Tustin, Calif. 92680.

Timing Support Module Serves STD-Bus Micros

LAKE OSWEGO, Ore. — Datricon Corp. has announced a 20-channel standard (STD)-Bus-compatible counter and frequency control module.

The Model CFIO-20 is a system timing support module for STD-Bus board-level microcomputers. The unit combines four Advanced Micro Devices, Inc. Am9513 System Timing Controllers with an Am9519A Priority Interrupt Controller. The device is said to meet all STD-Bus mechanical, electrical and timing specifications for Zilog, Inc. Z80; Intel Corp. 8085; and Motorola, Inc. 6800 standards, as defined by the STD-Bus Manufacturers Group.

The unit costs $395 from the firm at 155 B. Ave., Lake Oswego, Ore. 97034.

Programmable Controller Fits Gould Model 584 Micro

ANDOVER, Mass. — A mid-sized programmable controller designed for mid-sized control applications has been introduced by Gould, Inc.

The 584M is for use with the company's Model 584 personal computers. It is said to have a capability for up to 2,000 I/O points and 1,900 registers. It is available in two levels of functionality, including an advanced instruction set and Ascii capability. Each unit features local and remote I/O.

The 584M is priced at $9,500. More information is available from the vendor through Box 83-SVS, Andover, Mass. 01810.

NEC Security Feature Out For Data Modem 300/1200

MELVILLE, N.Y. — NEC America, Inc. has introduced a security feature for its Data Modem 300/1200 (N212BR).

The security feature was designed to restrict access to modem operations through a "programmable password," whereby the user programs his own password into the modem's memory, prohibiting anyone who does not know the password from using any modem function, according to the vendor.

NEC's data modem 300/1200 autodial and logon includes an automatic calling unit, storage capacity of up to 12 telephone numbers and logon sequences, four different dialing modes and editing and control functions.

The modem, including the security feature, costs $795 from the vendor. Additional information is available from NEC America, based at 532 Broad Hollow Road, Melville, N.Y. 11747.

The toughest test in a computer course at Digital is the one we use to test ourselves.

At Digital's Educational Services, quality is something we never take for granted. That's why we use a tough test to help us track how we're doing week after week.

And judging from recent results, we're doing very well.

You see, everyone who comes to our 27 worldwide training centers, whether they're studying basic programming or VAX/VMS system management, is asked to fill out a Student Opinion Form.

Course material, instructor performance, the overall educational experience, everything is covered.

And so far this year, 93% of the 55,000 people who've come to our training centers have given our instructors the highest ratings on the form. Results for course content and computer resources are equally as impressive.

Most important, our ongoing effort to create and preserve quality doesn't end in our classrooms. At Digital, it extends to every educational product we make. Our A/V and self-paced courses. Customer seminars. Computer-based instruction. And our Professional Educational Series, designed for anyone who wants to learn more about computers, even if they're not using Digital's computers.

So, whether you come to Digital for education, or our materials and courses come to you, you'll be getting a product that's proven successful. A product prepared by experts who not only know computer technology, but also the best ways to teach it.

For more information on the more than 550 computer courses we offer and our wide variety of educational formats, write to: Digital Equipment Corporation, Educational Services, Box M-BUO/E55, 12 Crosby Drive, Bedford, MA 01730.

digital

REDUCE APPLICATION BACKLOG.
ENHANCE PRODUCTIVITY.
STRETCH YOUR DP RESOURCES.

Read Computerworld's Special Report on Software Productivity Packages on June 27th.

Reduce application backlog. Enhance productivity. Stretch your DP resources. Read Computerworld's Special Report on Software Productivity Packages on June 27th.

You'll get a complete report designed to fill you in on systems software packages: Systems, teleprocessing monitors, capacity management/performance measurement tools. And, on utility packages: Debugging aids, application generators, sorts, query languages and report writers.

In addition, you'll get coverage of software products other than applications software packages that are *used by programmers rather than by end users.* These will include decision support systems, fourth generation languages and application development systems.

We're going to wrap software productivity packages up for you with application stories and case studies that describe actual end user experiences with these products. And you'll get non-product-specific tutorials that describe new concepts and ideas regarding software productivity packages.

Why is *Computerworld* devoting so much energy and coverage to these packages? Because you're gobbling them up as fast as they're developed. Because this segment of the software marketplace is growing at an incredible rate of 34% per year. And because these products are helping thousands of DP professionals



to reduce application backlog and to design and tailor applications that enhance productivity.

You'll get stories specifically designed to help you buy and plan better, like:

"How do you determine what kind of programmer productivity aids you need?"

"When do you know when you need a programmer productivity package?"

"Trends in mainframe operating systems."

"What role does DP play in a company's use of a decision support system?"

"How do programmer productivity packages affect overhead and CPU resource utilization?"

For these and many more stories designed to ask — and then answer — all your questions, just turn to your June 27th copy of *Computerworld's* Special Report on Software Productivity Packages.

And if you *sell* software productivity packages to professional DPers or to end users, you won't find a better place to reach your customers. They'll be reading this Special Report. Ad deadline is June 10th, and your *Computerworld* salesperson can give you all the details. Or, to be sure and get your ad included, just call Don Fagan, Vice President, Sales at (617) 879-0700.

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

SALES OFFICES

BOSTON/Chris Lee, Ed Marecki, Joe Fitzhugh, Jim McClure, Kathy Doyle, Diane Sukey, *(617) 879-0700*
CHICAGO/Art Kossack, Newt Barrett, Chris Lee, Jean Broderick, *(312) 827-4433*
NEW YORK/Mike Masters, Doug Cheney, Ray Corbin, Joan Daly, Fred LoSapio, Gale M. Paterno, *(201) 967-1350*
ATLANTA/Jeffrey Melnick, Mike Masters, *(404) 394-0758*
SAN FRANCISCO/Bill Healey, Barry Milione, Theodora Franson, A.G. Germano, Eileen Dunn, *(415) 421-7330*
LOS ANGELES/Jim Richardson, Bob Hubbard, Beverly Raus, *(714) 556-6480*

Stearns Introduces Micro Featuring WP, DP Functions

MINNEAPOLIS — A year-old vendor has entered the crowded personal computer arena with an IBM-compatible micro system that reportedly provides up to 2½ times greater performance than IBM's machines for roughly the same price.

Unlike many of its competitors, Stearns Computer Systems Corp.'s micro is optimized for both word and data processing, reportedly performing both functions with almost equal speed. The system can also operate either as a stand-alone machine or in a network with up to 32 interconnected workstations and can communicate with host mainframes through asynchronous or standard IBM protocols, a company spokesman said.

The system, Stearns' first, was formally introduced in mid-April at a large trade show in West Germany and is slated to make its formal U.S. debut in mid-May.

The computer supports both IBM's Systems Network Architecture/Synchronous Data Link Control and 3270 bisynchronous protocols as well as asynchronous transmissions. It is also compatible with an assortment of pro-

(Continued on Page 68)

Storage Units, Controller Expand NAS Tape Series

MOUNTAIN VIEW, Calif. — National Advanced Systems, Inc. (NAS) last week expanded its IBM-compatible tape subsystems line with the introduction of two additional storage modules and a controller that reportedly provide at least 20% greater price/performance than their IBM counterparts.

NAS's 7420 series tape units and 7803-23 controller offer twice the performance of IBM's recently announced 3430 subsystem for roughly the same price, according to an NAS spokesman.

The 7420 series models and the 7803-23 also provide approximately the same performance as IBM's more established 3420 tape systems and their 3803-2 controller, but boast a 20% to 40% lower price than those competing products, the spokesman said.

Designed to operate with IBM 4300 and 30 series processors, the 7420 family currently consists of two members — the Models 44 and 66. The introduction of the entry-level machines marks a downward extension of NAS's tape subsystem line.

The 7420-44 operates at 80 in./sec and transfers 128K byte/sec in the phase-encoded mode, NAS said. At 6,250 bit/in. in the group-coded recording mode, the system transfers 500K byte/sec.

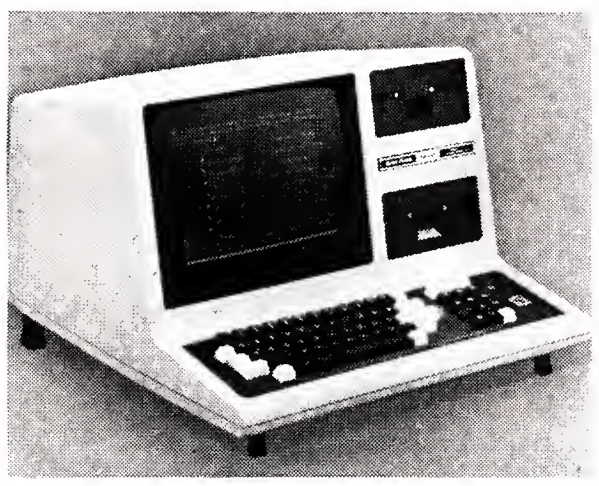
The 7420-66 operates at 125 in./sec and transfers 200K byte/sec and 780K byte/sec in the phase-encoding and group-coded recording modes, respectively, NAS said.

IBM's 3430, by contrast, operates at 50 in./sec and transfers 80K byte/sec at 1,600 bit/in. and 312.5K byte/sec at 6,250 bit/in.

In addition to providing faster operating speeds and data transfer rates than the 3430, the two NAS machines support a

(Continued on Page 70)

TRS-80 Model 4 Added to Line By Radio Shack



Radio Shack's TRS-80 Model 4

FORT WORTH, Texas — Radio Shack has unwrapped a sequel to its TRS-80 Model III that holds up to 64K bytes of memory, runs both Digital Research, Inc. CP/M-compatible and Model III-compatible programs and has sound capabilities.

Dubbed the TRS-80 Model 4, the system is available in one- or two-disk drive versions or as a 16K-byte cassette-based system. The two-disk drive model, holding up to 64K bytes of main memory, 368K bytes of disk storage, RS-232C and parallel printer interfaces, costs $1,999. The single-disk drive version, storing up to 184K bytes of formatted data, but not including the RS-232C interface, is priced at $1,699, a vendor spokesman said.

The cassette-based system, like the disk-based systems, comes with a 12-in. black-and-white screen that displays 80 col. and can be upgraded to perform the same tasks as the disk-based systems. It lists for $999, the spokesman noted.

The Model 4's 70-key typewriter-style keyboard has three programmable function keys and a 12-key numeric pad, according to the spokesman.

In an effort to increase the disk-based

(Continued on Page 70)

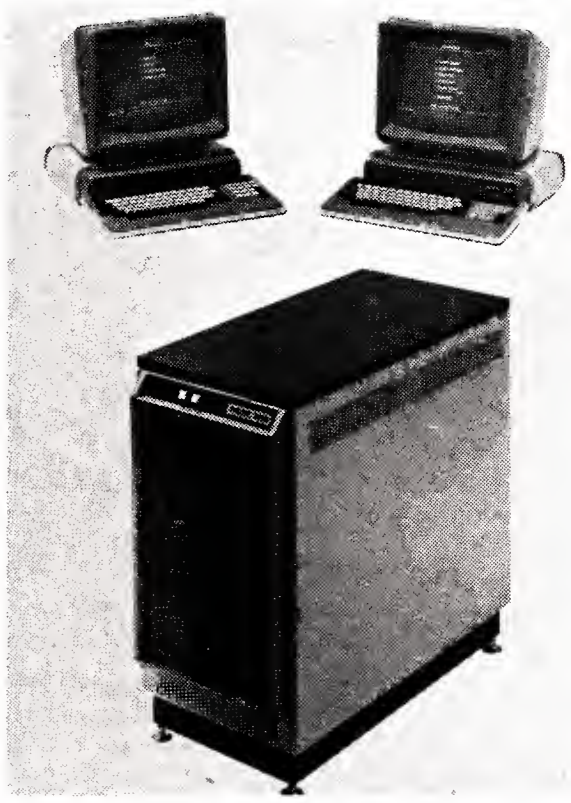
Said to Support Multitasking

Pertec Unveils System 3200 Line

IRVINE, Calif. — Pertec Computer Corp. has introduced a line of Motorola, Inc. 68000-based business computer systems called the System 3200 series. System 3200 units are said to support multitasking, single and multiple users. Languages include Basic, RM/Cobol and APL-68000, as well as applications developed under Digital Research, Inc.'s CP/M operating system.

The System 3200 family includes two desktop models. The first is the Model 3205 single-user system with 256K bytes of random-access memory, three RS-232 ports, monitor, keyboard, workstation and two 5¼-in. floppy disk units. The second, dubbed the Model 3215, is a multiuser system supporting up to five intelligent workstations via coaxial cable. It offers one 5¼-in. floppy disk and one 5¼-in. Winchester disk.

Prices for System 3200 members range from under $5,000 to $34,000 for the basic systems, the vendor said from 17112 Armstrong Ave., Irvine, Calif. 92714.



Pertec Computer Corp.'s System 3200

WE NOW RENT MICROCOMPUTERS



KAYPRO II

Call *DATA RENTALS/SALES, Inc.*

- Specializing in Microcomputer Rentals
- Offering Major Brands
- Featuring KAYPRO II with software
- Located Nationwide
- Expertise in Data Communications and Computer Terminals
- Founded in 1966, we are Old Pro's with new ideas to serve you!

NOW! TEXAS INSTRUMENTS PROFESSIONAL COMPUTER

DATA RENTALS/SALES, Inc.

Corporate Headquarters: 8611 Hayden Place, Culver City, California 90230

Los Angeles	(213) 559-3822	Philadelphia	(215) 532-7440
San Francisco	(415) 697-4911	Charlotte	(704) 523-6685
Orange Co., CA	(714) 553-0782	Tampa	(813) 934-0829
Outside California	(800) 421-4505	Outside Florida	(800) 237-9863
New York/New Jersey	(800) 345 8026		

Televideo Micro Features Hard, Floppy Disk Storage

ATLANTA — Televideo Systems, Inc. has unwrapped what it claims is the first 16-bit microcomputer to offer 10M bytes of half-height, hard-disk storage and 1M byte of floppy disk storage at the Comdex/Spring '83 conference held here recently.

The TS1603H uses an Intel Corp. 8088 microprocessor, has 128K bytes of internal memory, two RS-232C serial ports as well as an RS-422 port that connects the system to the vendor's local-area network. The system will run programs compatible with Microsoft, Inc.'s MS-DOS Version 2 and Digital Research, Inc.'s CP/M 86 operating systems, a Televideo spokesman said.

The unit's Winchester disk drive is a slim-line, 5¼-in. device, the company noted. The storage density of each of the system's drives has been increased from 48 track/in. to 96 track/in. Options for the TS1603H include internal memory expansion to 256K bytes and 640 by 240 dot/in. resolution graphics.

Televideo also announced it has enhanced its TS1603 by doubling the system's memory capacity to 2M bytes and making it compatible with programs developed under the MS-DOS Version 2 operating system.

The TS1603H costs $4,495 and the TS1603 costs $2,995. The vendor is located at 1170 Morse Ave., Sunnyvale, Calif. 94303.

Alphanumeric Scrolling Out For Raster Model One

NORTH BILLERICA, Mass. — Raster Technologies, Inc. has announced the availability of alphanumeric scrolling windowing firmware for its Model One family of color graphics controllers.

The firmware reportedly eases development of interactive, computer-aided design systems by allowing users to select the window size, the color of the foreground, background and text, as well as text size, angle and boldface in multiple scrolling text windows.

The windows are also said to provide for nondestructive overlay of text and priority display of text, a spokesman said.

The Raster Model One family of intelligent color graphics controllers contains an integrated debugger, over 100 graphics commands and an applications development package.

Existing Model One/40 and One/60 units covered by Raster's annual update service will receive the alphanumeric scrolling window firmware at no charge. For other customers, the upgrade is priced at $350. More information is available from Raster Technologies, 9 Executive Park Drive, North Billerica, Mass. 01862.

Stearns' Micro Said to Perform WP, DP Function

(Continued from Page 67)

gramming languages, including Basic, Cobol, Fortran and Pascal.

The microcomputer incorporates an Intel Corp. 8086 microprocessor, which operates at 8 MHz, more than twice the speed of the IBM Personal Computer's Intel 8088. Unlike the 8-bit IBM micro, the Stearns product also uses a 16-bit bus and further enhances its performance through a proprietary random-access memory refresh technique, the vendor said.

Although it uses the same operating system as its IBM competitors, Microsoft, Inc.'s MS-DOS, the Stearns unit comes with additional proprietary software said to overlay the processor's control program. This extra software layer, in effect, extends MS-DOS and allows users to revise their configurations from a keyboard to communicate with almost any commercially available data base management system, the company official said.

Aimed primarily at users in Fortune 1,000 companies, the micro supports Micronet, Stearns' proprietary communications network, which allows up to five of the units to be interconnected and to share common storage and other system resources. By December, the machine will also be available with Stearns' Intelligent Communication System (ICS), which will reportedly permit users to form local or distributed networks embracing as many as 32 workstations.

With either ICS or Micronet, the Stearns computer will run under Digital Research, Inc.'s Concurrent CP/M-86 operating system. As a single-user product, meanwhile, the machine will continue to use Microsoft's MS-DOS.

A basic system requires 128K bytes of main memory that can be expanded in 128K- or 256K-byte increments for a maximum of 896K bytes. The unit can also be configured with a choice of up to four 5¼-in. floppy and two 5¼-in. Winchester disk modules.

Prices for the system start at about $3,300, and deliveries will begin in May from Stearns at 3501 Raleigh Ave. S., Minneapolis, Minn. 55416.

For scientific computing high price for

The FPS-164 Attached Processor— A Unique Solution for Cost-Effective Scientific Computing.

Now, VAX™, IBM, Sperry and Apollo users can get a powerful tool specifically designed for solving computationally-intensive problems.

It has the speed, accuracy and memory capacity to solve large-scale scientific and engineering problems—the kind that overload the capability of your general purpose computer and make you wish you could afford a supercomputer. Yet you can buy it for a fraction of the cost of a supercomputer.

Floating Point Systems presents the FPS-164 Attached Processor.

The Attached Processor Concept

When attached to a VAX, IBM, Sperry or Apollo system, the FPS-164 offloads and processes computationally-intensive tasks, leaving the host computer free for other work. The FPS-164 will expand your computer's capability, relieve its overload and make it possible to solve problems that your system previously could not.

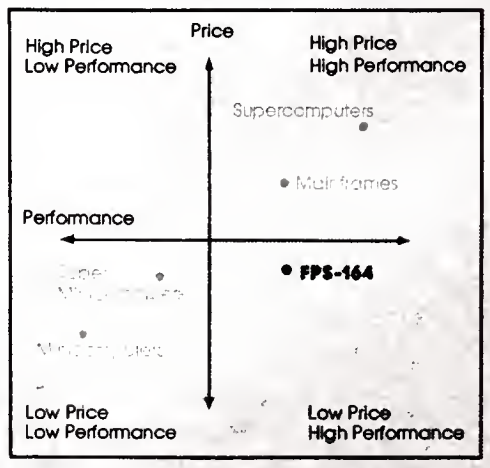
There's no need to replace your system.

Price/Performance

Compare the price/performance of the FPS-164 to other options for scientific computing.



It offers up to 12-million floating-point computations per second (MEGAFLOPS), gives you 15 decimal digits of precision, and up to 7.25 Megawords (58 Megabytes) of memory for prices starting at $300,000 (U.S.).



Solutions Using Sparse Matrices

$$\begin{bmatrix} c_1 & d_1 & 0 & e_1 & & & & \\ b_2 & c_2 & d_2 & 0 & e_2 & & & 0 \\ 0 & b_3 & \cdot & \cdot & \cdot & \cdot & & \\ a_4 & 0 & \cdot & \cdot & \cdot & \cdot & \cdot & \\ & a_5 & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ & & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & e_{n-3} \\ & & & \cdot & \cdot & \cdot & \cdot & \cdot & 0 \\ 0 & & & & \cdot & \cdot & \cdot & \cdot & d_{n-1} \\ & & & & & a_n & 0 & b_n & c_n \end{bmatrix}$$

Many scientific and engineering applications use sparse matrix methods in their problem solving. The FPS-164 is especially suited for these operations which can account for up to 95% of the CPU time.



Gavilan Computer Unwraps 16-Bit, 9-Lb Portable Micro

CAMPBELL, Calif. — Billed as a "mobile office in a briefcase," Gavilan Computer Corp. has unwrapped a 16-bit, 9-lb portable microcomputer featuring a built-in touch panel that allows users to move a pointer across the unit's eight-line flat LCD screen.

Measuring 2.9 in. by 11.4 in. by 11.4 in., the Gavilan system has a full typewriter keyboard and a 10-key numeric pad and will run for up to eight hours on rechargeable batteries. The company said 30% of the system's sales will be to Fortune 1,000 firms with the remaining sales to OEMs.

Priced at $3,995, the Intel Corp. 8088-based system holds up to 80M bytes of internal memory (of which 32K bytes is available to the user), has a 3-in. microfloppy drive that accommodates up to 320K bytes of formatted information, a built-in 300 bit/sec modem, a recharger, an interface allowing the system to be connected with any standard full-size video display and the Gavilan operating system. The 16-bit system will also run programs developed under MS-DOS.

Options for the Gavilan include a 5-lb printer that prints onto 8½- by 11-in. paper; plug-in memory expansion capsules containing 32K bytes of random-access memory or erasable progammable read-only memory along with their own lithium batteries; a vehicle power adapter that permits the unit to be operated from a vehicle cigarette lighter; and an attachable module combining 128K bytes of additional processor memory with a second 3-in. microfloppy disk drive.

According to company president, Manny Fernandez, five types of software will be provided for the system: proprietary built-in software; five internal, fully integrated application systems including word processing, spreadsheet and communications; the MS-DOS operating system with Basic and Pascal development languages; MS-DOS-compatible application packages; and an application development software system that runs on either the Gavilan or IBM Personal Computer.

The Gavilan's unique feature, according to Fernandez, is its touch panel or "solid-state mouse" that moves a pointer on the screen to the desired file or item.

The machine is scheduled to be shipped to beta test sites in June with volume shipments expected later this year, Gavilan Computer said from 240 Hacienda Ave., Campbell, Calif. 95008.

you don't have to pay a performance.

For example, a FORTRAN program performing a common sparse matrix operation ran 6 times faster on the FPS-164 than on a popular scientific super-minicomputer. When the program was modified to take advantage of the FPS-164 architecture, the sparse matrix operation ran over 14 times faster than on the super-minicomputer.

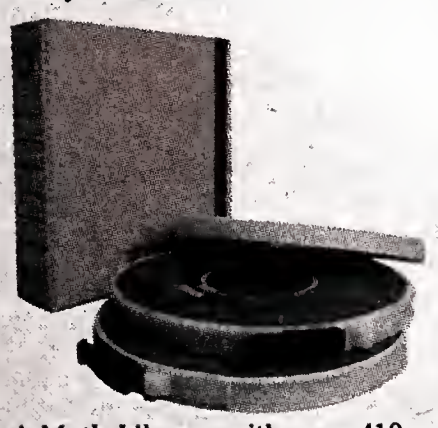
The FPS-164 is presently being used in applications such as computational chemistry and physics, structural analysis, finite element analysis, oil reservoir modeling, and electronic circuit design.

Ease of Use

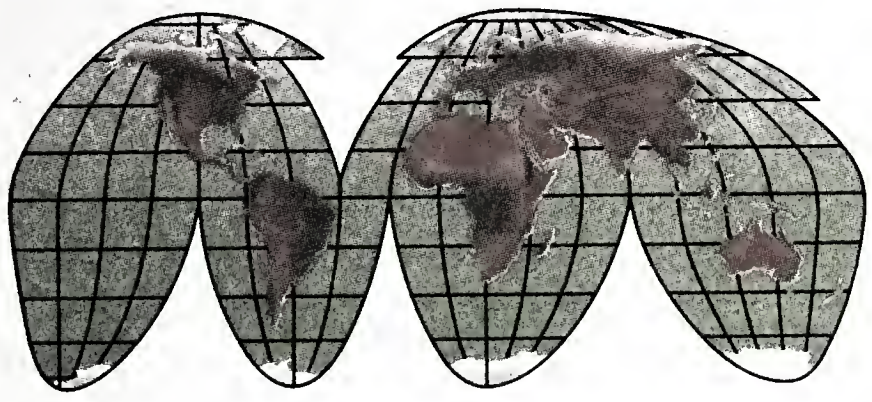
There's no need to reconstruct your program. With the Single Job Executive, you run complete jobs on the FPS-164 Attached Processor as easily as using your own familiar computer. You continue to use your existing system for transferring files to the attached processor and for retrieving the results.

Ease of Programming

For software development, Floating Point Systems offers development tools for getting maximum use from the FPS-164, including the FORTRAN 77 Optimizing Compiler, and an Overlay Linker.



A Math Library with over 410 FORTRAN callable subroutines is also available.



Superior Reliability and Worldwide Support

Floating Point Systems has established an impressive record for reliability of products and customer support. Over 4,000 attached processors have been delivered and are being supported with service facilities at key locations throughout the world, remote diagnostic, comprehensive documentation and software support, installation, training and more.

Call Us

If you need improved price/performance from a scientific computer, call Floating Point Systems, toll free at (800) 547-1445.

The world leader in array processors.

FPS® FLOATING POINT SYSTEMS, INC.

P.O. Box 23489 MS-S586
Portland, OR 97223
(503) 641-3151
TLX: 360470 FLOATPOIN BEAV

FPS Sales and Service Worldwide.
U.S.: Albuquerque (NM), Atlanta (GA), Dedham (MA), Denver (CO), Hartford (CT), Houston (TX), Laguna Hills (CA), Los Angeles (CA), New Orleans (LA), New York (NY), Orlando (FL), Palo Alto (CA), Philadelphia (PA), Rockville (MD), Schaumburg (IL), Seattle (WA).
INTERNATIONAL: Canada — Calgary, Montreal, Ottawa; England, Bracknell, Berkshire; France, Rungis; Japan, Tokyo; Netherlands, Gouda; West Germany, Haar.
DISTRIBUTORS: Australia and New Zealand, Milsons Point, N.S.W. (Techway PTY. (LTD.); Austria, Vienna (Elektronische Bauelemente Und Geräte); Finland, Helsinki (OY Emmett AB); India, Bombay (Hinditron Computers PVT. LTD.); Israel, Tel Aviv (Eastronics, LTD.); Korea, Seoul (Korea Computer Center, Inc.); Singapore (Scientek Corporation); Southern Africa, Johannesburg (Anker Data Systems); Sweden and Norway, Vaxholm (Tre Konsulter AB); Taiwan and Hong Kong, Taipei (Scientek Corporation).

© Copyright Floating Point Systems, Inc. 1983

VAX™ is a registered trademark of Digital Equipment Corporation.

Send for our brochure.

Floating Point Systems' colorful 20-page brochure provides more information on the unique price/performance advantages of the attached processors.

Name _____
Title _____ Company _____
Address _____ City _____
State/Province _____ Zip/Postal Code _____
Country if outside U.S.A. _____ Telephone _____
My application/use is: _____

CW 5/9

Printers Target IBM Systems

TUSTIN, Calif. — Ampak Business Systems, Inc. has announced seven printers for IBM's System/34, System/38 and Personal Computer.

A 55 char./sec daisywheel printer, which is interchangeable under operator control for all three IBM systems, is available for $4,290. A multimode matrix printer, which operates at 200 char./sec in a data processing mode and 50 char./sec in a word processing mode is available for $5,290.

The firm is also offering a Xerox Corp. 2700 laser printer for the three IBM systems. The 2700 can operate at 12 page/min with a resolution of 90,000 dot/sq in. and costs $23,995, the vendor said.

Other printers announced by the firm include: a matrix printer that can produce 150 char./sec and costs $2,850, and three band printers which can operate at 300-, 650- and 1,000 64-char. line/min. The band printers cost $7,495, $9,250 and $13,950, respectively, the vendor said from 2640 Walnut, Tustin, Calif. 92680.

Micro Line Released for Multiuser Applications

MOUNTAIN VIEW, Calif. — Cromemco, Inc. has introduced a series of general-purpose microcomputers to perform multiuser, multitasking applications in business, engineering, science and educational environments.

Equipped with both Motorola, Inc. 68000 and Zilog, Inc. Z80A processors, the CS-3A System Three also contains two 8-in., slim-line disk drives that can handle up to 2.4M bytes of floppy disk storage. The system has expansion capability up to 4M bytes of physical memory, with optional error checking and correcting memory, the vendor noted. Disk storage is reportedly expandable with an optional 21M-byte unformatted integral hard disk.

This product line can be used for networking applications using the vendor's C-Net local-area network. Other features of the CS-3A line include the vendor's Cromix operating system, which reportedly provides users with a Bell Laboratories' Unix-like interface, plus the ability to run CP/M-based software, according to a vendor spokesman.

The CS-3A product line is priced between $6,995 and $7,995. Cromemco can be reached at 280 Pernardo Ave., P.O. Box 7400, Mountain View, Calif. 94039.

Radio Shack Unwraps TRS-80 Model 4

(Continued from Page 67)

machines' processing speed, the company is bundling in a new operating system called TRSDOS 6.0 as well as Microsoft, Inc.'s version of Basic.

TRSDOS 6.0 has a Memdisk feature that creates a fast disk drive in unused memory, which eliminates time-consuming disk access, the spokesman said. The operating system's sound control includes variable tone and duration. Prompts, alerts and sound effects can be selected using the Sound command from Basic or as specified from the built-in job control language, the spokesman added.

The Model 4 also has a print spooler that frees the system to perform other tasks while it is printing. In addition, it has a terminal program called Comm that provides disk file send and receive capabilities and modem support for communications with other TRS-80 microcomputers and information networks such as Dow Jones & Co., Inc., the spokesman maintained.

The Model 4 disk versions' 64K bytes of main memory can be upgraded to 128K bytes and up to 4 MHz clock speed, the vendor spokesman claimed. In addition, other options include a 64K-byte random-access memory kit priced at $149, high-resolution graphics and a 5M-byte hard disk.

CP/M Plus and CBasic will be available shortly for the Zilog, Inc. Z80A-based system, the vendor said from 1800 One Tandy Center, Fort Worth, Texas 76102.

In the world of emulating terminals...
VISUAL is a world apart.



VISUAL EMULATION CAPABILITY

VISUAL 50/55 are low cost smart terminals. The VISUAL 50 emulates DEC VT52®, Lear Siegler ADM3A,™ Hazeltine Esprit™ and ADDS Viewpoint.® VISUAL 55 emulates the same plus Hazeltine 1500/1510 and VISUAL 200/210.

VISUAL 100 is 100% compatible with the DEC VT100® and also emulates the VT52.

VISUAL 300/330 are versatile terminals that can be easily customized. The VISUAL 300 emulates the DEC VT100 and VT52. VISUAL 330 emulates the DEC VT52, ADM3A, Hazeltine 1500 and Data General D200.

VISUAL 500/550 are low cost, high resolution graphic terminals with powerful alphanumeric capabilities. The VISUAL 500 emulates the VT52, ADM3A, Hazeltine 1500, D200 and Tektronix® 4010/4014. The VISUAL 550 emulates the VT100, VT52 and Tektronix 4010/4014.

VISUAL terminals feature extended ergonomics including tilt and swivel non-glare 12" or 14" screens, detached keyboard, large character size, menu-style setup, sculptured key caps and more.

VISUAL has carved out a unique niche... in the emulating terminal series offer a combination of features on no other terminals anywhere at any price. VISUAL delivers higher performance at lower cost in every market segment. And nobody else gives such a wide choice of emulations as VISUAL... the pioneer in the field.

So check the chart before you choose your next terminal. See for yourself why VISUAL stands alone as the first choice for emulating terminals.

Service available in principal cities through Sorbus Service, Division of Management Assistance, Inc.

VISUAL See for yourself

Visual Technology Incorporated
540 Main Street, Tewksbury, MA 01876
Telephone (617) 851-5000. Telex 951-539

NAS Introduces Control Unit, Storage Modules

(Continued from Page 67)

wider array of operating systems than their IBM counterpart, the spokesman said. Both the Model 44 and 66 work with MVS, VM, VS1, VSE, OS/MFT, OS/MVT and the Airline Control Program.

The 3430, however, reportedly supports only VM and VSE.

Among the 7420 family's other advantages over the 3430 is the NAS line's superior storage-module support. The NAS machines' 7803-23 controller supports as many as eight concurrent tape units, compared with four for the product that controls the 3430, the vendor spokesman said.

Both the 7420-44 and -66 are also equipped with a two-channel switch as well as with two-by-eight and two-by-16 control switches — features not offered with the 3430, the source claimed.

A typical 7420-44 costs more than 20% less than a comparably configured 3420-4 tape system, while a 7420-66 typically sells for almost 25% less than an equivalent 3420-6. The 7803-23 controller, meanwhile, is priced more than 40% lower than the 3803-2, according to the vendor spokesman.

In addition to being compatible with 4300 and 30 series processors, the 7420 family subsystems reportedly operate with all IBM 370 series members starting with the Model 135. The NAS units can also be used with the vendor's own Advanced System/3000, 5000 and 6600 series processors.

The 7420-44, -66 and 7803-23 cost $15,000, $17,000 and $20,000, respectively.

Deliveries of all three models will begin in July from NAS at 800 E. Middlefield Road, Mountain View, Calif. 94042.

At last, a system with a head for numbers, an eye for pictures, and a mind of its own.

Introducing the Kodak KAR-4000 information system. Take the processing power of a stand-alone computer. Add a "photographic memory" to access original document images. Top it off with comprehensive, one-source software and service.

The result: a Kodak KAR-4000 information system.

It outperforms any other computer-assisted retrieval system. But it also functions independently to process both documents and office data.



You gain independent computer-controlled access to on-line data and documents. Without the staggering expense of on-line computer storage.

You even gain independence from service—all components in the KAR-4000 system are serviced by Kodak.

So before you pick any other "system," send in the coupon. And pick the brains behind the KAR-4000 information system.

The Kodak KAR-4000 information system. It gives the computer a photographic memory.

Kodak

© Eastman Kodak Company, 1983

Send to: Eastman Kodak Company, Business Systems Markets Division, Dept. DP 3552, Rochester, NY 14650

Please tell me more about Kodak's KAR-4000 information system.

Name _____

Company _____

Address _____

City _____

State _____ ZIP _____

Please answer the following:

1. How many incoming documents per day do you process? ☐ 1000-2000 ☐ 2000-5000 ☐ Over 5000
2. How many documents do you normally retrieve each day? ☐ Less than 10 ☐ 10-25 ☐ Over 25

Add-In Memory Boards Fit DEC VAX-11/750, 730

NEWTON, Mass. — EMC Corp. has announced 1M-byte and 512K-byte add-in memory boards for Digital Equipment Corp. VAX-11/730 and VAX-11/750 processors.

Called the EMC VX-1MB and VX-1/2MB, the boards are standard plug-compatible hex cards. Each memory board contains a rear-mounted off-line switch that allows the memory card to be electrically disconnected. An LED status light is also mounted at the rear of each card, the vendor said.

The EMC memory boards are completely hardware- and software-compatible with the VAX-11 host processors, the company noted. The 512K-byte board costs $1,550, and the 1M-byte unit costs $2,450, the vendor said from 385 Elliot St., Newton, Mass. 02164.

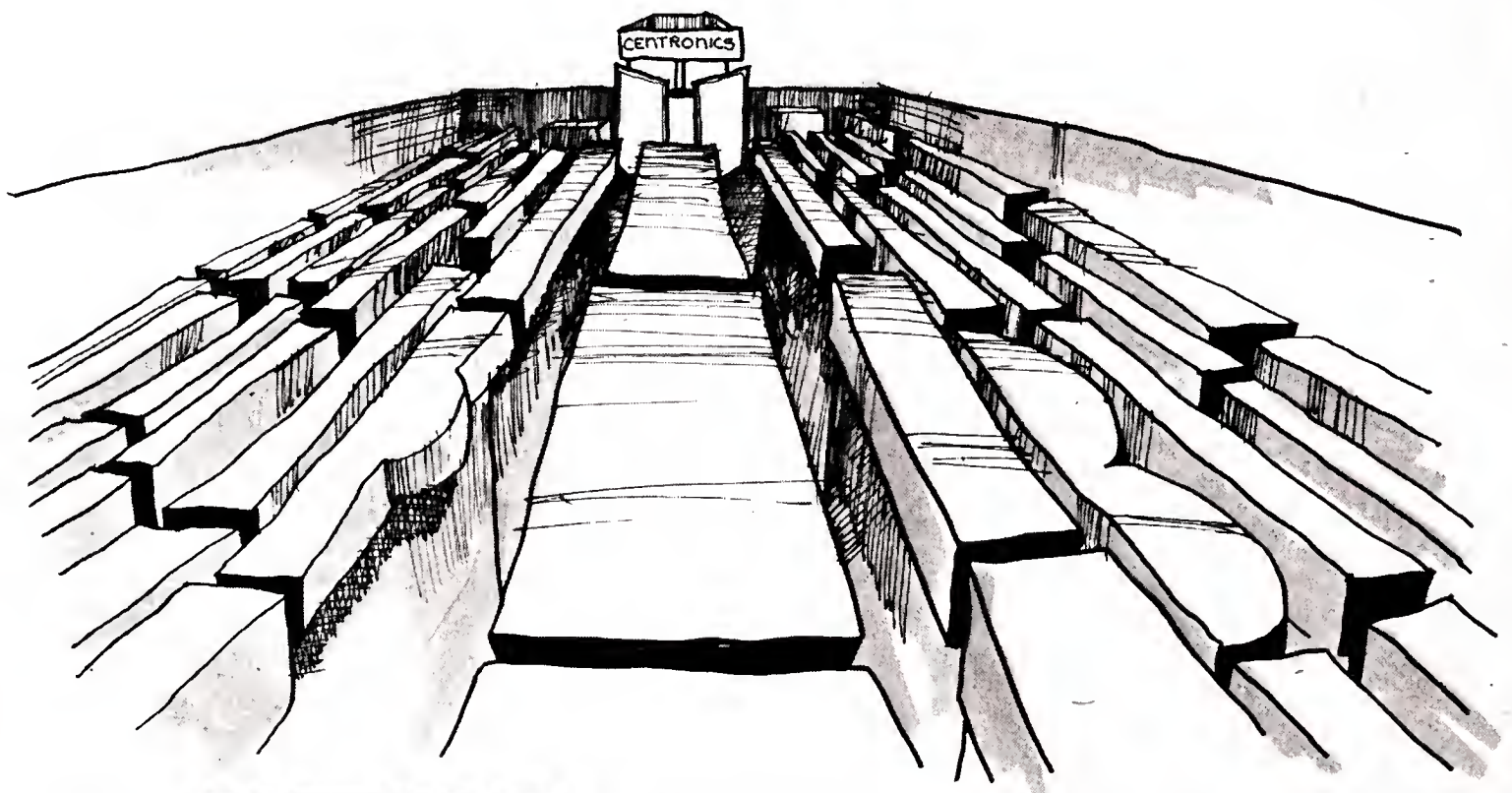
Memory Board Fits Q-Bus Systems

SANTA ANA, Calif. — Trendata Corp. has announced a 1M-byte quadwide memory board for Digital Equipment Corp.'s Q-bus systems.

Called the Pincomm 23S+, the unit can operate on DEC PDP-11/23 Plus, Micro-11, PDP-11/23S, LSI-11/23 and other Q-bus systems. The unit features switch-selectable 22-bit addressing that allows a user to add memory to complete the range of 22-bit systems in four slots. All other board functions are switch-selectable, the vendor said.

Additional features include compatibility with battery backup, an on-line/off-line switch and LED run, power and error indicators.

The 1M-byte Pincomm 23S+ costs $2,945, the vendor said from 3400 W. Segerstrom Ave., Santa Ana, Calif. 92704.



WE'RE BACK AT NCC. WAY BACK.

Just last week, we introduced five exciting new products representing major advances in line printer and dot matrix "Printstation" technology. Advances destined to revolutionize the way people think about and use printers.

We intended to spotlight them, front and center, at NCC. So we registered for Booth N-3600 right in the front of the hall.

However, the phenomenal attendance generated by this year's show has caused the Registration Area to be moved to the other end of the hall.

Now, instead of being in the front, we're in the back. *Way* in the back. With some other good friends like IBM, Eastman Kodak, Wang, Bell Systems, Perkin–Elmer, 3M, and Fairchild.

So when you're looking for Centronics at NCC this year, find the registration area and keep walking. All the way back. To Booth N-3600. What you see will be worth the walk.

CENTRONICS® PRINTERS

Multiuser, 16-Bit Desktop Debuts

MONTGOMERYVILLE, Pa. — A 16-bit, multiuser desktop system capable of supporting up to four users has been unveiled here by Digilog Business Systems, Inc. (DBS).

The DBS 16 microcomputer contains an Intel Corp. 80186 microprocessor, two 5¼-in. disk drives, 256K to 512K bytes of random-access memory and interface capacity for one to four DBS workstations, the vendor said. It operates under Digital Research, Inc. CP/M operating system software.

The DBS 16 is priced from $1,095, the vendor said from Welsh Road & Park Drive, P.O. Box 355, Montgomeryville, Pa. 18936.

Mostek Boards Out for DEC

CARROLLTON, Texas — Mostek Corp. has announced an add-on memory board for Digital Equipment Corp.'s PDP-11/70 processors and three control circuit boards for the VMEbus. The VMEbus was designed jointly by Mostek, Motorola, Inc. and Signetics Corp. as a microcomputer interconnect bus.

The add-on memory board for DEC PDP-11/70 processors features from 1M to 4M bytes of additional memory. Called the MK8661, the memory boards are hardware- and software-compatible with the DEC processors and are identical to similar memory upgrades offered by DEC, the vendor said. A 2M-byte memory configuration costs $13,850, the vendor said.

The three VMEbus boards include a floppy disk controller board, a Shugart Associates, Inc. System Interface (Sasi) board and a memory managing CPU board.

The three boards were designed for a variety of applications including data processing, word processing and image processing, as well as communications and industrial automation applications, according to a vendor spokesman.

The floppy disk controller board costs $1,250, the Sasi interface costs $1,250 and the memory-managing CPU costs $2,300, the vendor said from 1215 W. Crosby Road, Carrollton, Texas, 75006.

Sorbus Supports TRS-80 Model III

FRAZIER, Pa. — The Sorbus Service Division of Management Assistance, Inc. has announced a full-service option for the Radio Shack TRS-80 Model III and its related peripherals.

Users have the option of on-site maintenance, van pickup and delivery or carry-in service. A Sorbus spokesman said maintenance on most components can be carried out within 24 hours at the firm's 160 service locations, 15 maintenance depots or eight Sorbus Station computer support retail centers.

While pricing varies depending on the configuration, a Sorbus spokesman said a typical 48M-byte system with two floppy disk drives costs about $38/mo for on-site maintenance and about $22/mo for a carry-in maintenance contract.

Sorbus offers similar maintenance plans for IBM and Apple Computer, Inc. microcomputers, the firm said from 50 E. Swedesford Road, Frazier, Pa. 19355.

Managers, Secretaries Polled

Study Identifies Key to OA Productivity

By Bruce Hoard
CW Staff

MINNEAPOLIS — A national study conducted by Response Analysis for Honeywell, Inc. has found that managers and secretaries identify communications — human, not electronic — as the key to improving office productivity.

It also found that more than half of the offices surveyed do not have word processing equipment and that fewer than one in 10 managers use a personal computer.

Response Analysis questioned 1,264 secretaries and 937 managers from 443 companies with 100 or more employees. Results were based on a computer-generated random sample, drawn by Dun & Bradstreet, Inc., of "information-intensive" businesses throughout the U.S.

Four in 10 secretaries thought that the most important thing managers can do to improve secretarial productivity is to communicate better, the study claims. That group said they want managers to inform them about how their work fits into the project as a whole and to minimize changes requiring typing.

Only one in five secretaries said no communications improvement is necessary.

Secretaries also expressed a desire to take a more "team-oriented" approach to office work. One third of the secretaries surveyed supported that desire. However, only one-half as many managers agreed.

The study found that managers think they would be more productive if secretaries would minimize unnecessary interruptions and take on more responsibilities. Managers also cited the need for more automated equipment.

'Four in 10 secretaries think that the most important thing managers can do to improve secretarial productivity is to communicate better . . . only one in five secretaries said no communications improvement is necessary.'

While more than one-half of the offices surveyed did not have word processing equipment and fewer than one in 10 managers used a personal computer, there is still a strong interest in automated equipment, the study claims.

It backs that claim by noting that four out of 10 managers who do not have automated equipment said they favor it for their own use.

Managers who can type were reportedly more interested in what the equipment can do — especially in producing work of higher quality.

Managers who do not know how to type were more likely to say that their work would not be affected, the survey explained.

More than one-third of nonuser managers and secretaries said that half or more of their daily work could be automated, but only 21% of paired managers and secretaries could agree on that point.

Both managers and secretaries agreed that secretaries are capable of taking on more responsibilities with automated equipment, although four in 10 managers said their secretaries are already too busy.

Seventy-five percent of secretaries said they are not too busy to take on extra duties, and 40% said their managers see no need to delegate work to them, the survey found.

The study is available free from Honeywell Corporate Public Relations at Honeywell Plaza, Minneapolis, Minn. 55408.

CSC Adds Reporting Feature To Its Electronic Mail Service

EL SEGUNDO, Calif. — Computer Sciences Corp. (CSC) has added automated reporting features to Notice, its electronic mail service.

With the new features, Notice enables a user to design reports that prompt clerical personnel for the information required to complete the report.

The clerk can then order the data to be analyzed by sets of predeveloped computer programs, consolidated with similar information from other sources and automatically forwarded to designated recipients anywhere on the company's Infonet network, according to a vendor spokesman.

Users can send and receive messages and reports through a variety of devices, including personal computers, minicomputers, word processors and both dumb and intelligent terminals, a vendor spokesman said.

Notice service is priced at normal charges for Infonet resources used, the spokesman said.

More information is available from CSC, 650 N. Sepulveda Blvd., El Segundo, Calif. 90245.

ADP Net's Automail Expanded To Include Telex Capability

ANN ARBOR, Mich. — ADP Network Services, Inc.'s mail service, Automail, has been expanded to include telex addressing and receiving capability.

Automail moves and stores information and messages electronically to locations connected by a communications network, the vendor said.

Through the telex interface, business organizations can reportedly transmit a message simultaneously to both telex addresses and other Automail locations without retyping and resending the message.

With the service's electronic bulletin board features, organizations can reportedly make time-critical information centrally available to distant office locations. The bulletin boards can also be used as a part of the employee communications program to post job openings or announce policy changes, a vendor spokesman said.

Users of the telex service pay the standard Automail rate of $14 per hour of connect time, as well as regular telex charges. More information is available from the vendor at 175 Jackson Plaza, Ann Arbor, Mich. 48106.

'Mergeright' Fits Serif Processors

MINNEAPOLIS — Wordtronix, Inc. has announced Mergeright, a variable information generation package for the firm's Serif1 and Serif2 word processing systems.

The package can be used to generate mailing lists and customer information. The information on the list can then be merged with a letter. The software function is accessible through the firm's Typerright II word processing software.

The Mergeright feature costs $300 from the firm at 9950 W. 74th St., Minneapolis, Minn. 55344.

DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS

SATURN-CALC

ELECTRONIC FORECASTING AND FINANCIAL MODELING

Available for immediate delivery

- Provides multiple worksheets in a file
- Outputs ASCII files compatible with WP SATURN and other applications
- Written in assembly language
- Supports most common CRT's — VT100, VT 52, ADDs, Hazeltine...
- Provides help text and prompts
- Supports variable width columns

FOR MORE INFORMATION CALL
800-328-6145

SATURN®
SATURN SYSTEMS, INC.
6875 WASHINGTON AVENUE SOUTH, SUITE 218
MINNEAPOLIS, MN 55435 • 612/944-2452

DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS DEC USERS

Features Column Manipulation

WP Capability for HP 3000 Out

BELLEVUE, Wash. — Minisoft Office Systems, Inc. has announced a word processing capability for Hewlett-Packard Co.'s HP 3000 system.

Miniword was designed to be used with any terminal as a full-function word processor connected to the HP 3000. Miniword is used on a microprocessor called Softbox, which front ends each computer terminal with 64K bytes of memory.

Miniword features column manipulation, global search and replace, interface to data processing for mass mailings, multiple formats per document, automatic pagination and underscore.

Miniword carries a license fee of $7,500 first site and $4,500 second site. Softbox is priced at $895. More information is available from Minisoft at 1611-116th Ave. N.E., Bellevue, Wash. 98004.

Honeywell Facility Bows

WALTHAM, Mass. — Honeywell, Inc. announced a modular Electronic Forms and Fonts facility for its non-impact, high-speed Page Processing System.

The facility enables users to design custom forms and fonts interactively.

It costs $22,500, plus $225 in monthly hardware and software support fees, Honeywell said from 200 Smith St., Waltham, Mass. 02154.

Office System Runs on IBM, DEC, Prime, PE Units

KING OF PRUSSIA, Pa. — AGS Management Systems, Inc. has announced Office-Pro, a full-screen, menu-driven, single-key command system designed to help users perform common office functions.

For use with IBM's CICS, Digital Equipment Corp.'s PDP-11, Prime Computer, Inc. or Perkin-Elmer Corp. systems, Office-Pro can reportedly file and retrieve mail messages, narrative files and customer/prospect information. Mail messages can reportedly be sent, read, previewed, filed, distributed and answered; and telephone messages are said to be automatically distributed to the proper individuals.

The package is priced at $31,500 from the vendor at 890 Valley Forge Plaza, King of Prussia, Pa. 19406.

WP Tool For Series/1 Gets Updated

GARDEN GROVE, Calif. — Computer Information Enterprises, Inc. has introduced an enhanced version of the original word processor for the IBM Series/1.

Cats II features word wrap at the right margin, automatic paragraphing, a spelling dictionary, abbreviation expansion, document assembly, mass-mail letter and envelope, page header and footers, automatic page numbering and automatic document date version, a vendor spokesman said.

The word processing package sells for $1,500; the dictionary and mass mailer cost $500 each. More information is available from the vendor, which is located at 13030 Euclid St., Garden Grove, Calif. 92643.

Eckerly Offers OA Reports

BROOKLINE, Mass. — The Eckerly Co., which specializes in surveys, training and consulting for office automation, introduced the Eckerly Reports on Office Automation Productivity.

The reports are tailored specifically for each subscriber. Over a one-year period, the report process is performed every quarter for sponsor organizations. Each building block of office automation is examined: word/text processing, desktop computers and telephone systems.

A one-year subscription costs $4,000 and generally covers organizations with up to 50 employees, Eckerly said from Suite 206, Hearthstone Plaza, 111 Washington St., Brookline, Mass. 02146.

The Economics of Office Automation

Personal computers are designed for single users.

So when you string them together on a network, you pay for a lot of duplicated features. Disk drives. Operating systems. Peripheral controllers. And application software.

Not to mention the cost of the hard disk needed for mass storage horsepower.

Better idea: look for the system designed for multiple users.

Molecular Computer, the unique local area network-in-a-box. For each added user, you add a microprocessor and RAM memory to the box. Up to 64 on-line users are plugged into a common data base (up to 272 MBytes), shared CP/M®-compatible software, printers, modems, and each other.

You get more performance than a personal computer network. For less money.

In fact, list price for a typical seven-user Molecular system is under $3,000 per user. Including terminals, software, and a letter quality printer. Cost-per-user decreases as more users are added.

So use your personal computer to run spreadsheets at home. And build your office of the future around Molecular.

We're changing the economics of office automation.

PERSONAL COMPUTER NETWORKS ARE INEFFICIENT.



molecular computer™
The Supermicro Company©

Corporate Headquarters 251 River Oaks Parkway, San Jose, CA 95134 (408) 262-2122, Greenwich, Connecticut (212) 686-1663
Houston, Texas (713) 960-9770, McLean, Virginia (703) 448-6080, Tallahassee, Florida (904) 878-6282.

CP/M is a registered trademark of Digital Research, Inc.

SIA Notes Steady Increase in Orders

Recovery Looks Good for Semi Industry

By Bill Laberis
And Robert Batt
CW Staff

No one is doing cartwheels yet, but signs of a steady recovery within the semiconductor industry are becoming apparent.

And a sustained recovery for the semiconductor makers, most of which fared poorly throughout the recession, can only mean sustained recovery for their customers, the computer vendors. However, the question remains: Will the positive signs continue or melt away come summer like last year?

As the accompanying table shows, the top merchant semiconductor companies in the U.S. — those who sell most of their chips to other vendors — posted mixed results in the first quarter of 1983. Intel Corp., for example, rebounded strongly from its dismal quarterly results a year ago, while National Semiconductor Corp. continued to register big losses.

But what the table does not show is a steady increase in semiconductor orders that began last November and has gained momentum ever since, according to the Semiconductor Industry Association (SIA).

Figures recently reported by the SIA's 55 members showed that orders in the first quarter exceeded shipments by 32%. This figure was 18% in the same quarter a year ago, Thomas Hinkelman, executive director of the SIA, said.

"We're being cautious, of course, because things were

(Continued on Page 80)

	First Quarter 1983 Revenues / Profit (Loss)	First Quarter 1982 Revenues / Profit (Loss)	% change Revenues / % Change Profit
Texas Instruments	1.17 Billion / 7.1 Million	1.08 Billion / 27.7 Million	8% / -74%
Motorola	942 Million / 32 Million	913 Million / 34.6 Million	3% / -8%
National Semiconductor	263 Million / (18 Million)	239 Million / (5.4 Million)	10% / -333%
Intel	237 Million / 12.5 Million	207 Million / 5.4 Million	14% / 230%
Advanced Micro Devices	97 Million / 6.6 Million	75 Million / 3.1 Million	29% / 113%

Semiconductor Scoreboard

Miti Director Cites 'Harmonizing' As Factor in Japan's Industrial Success

By Bruce Hoard
CW Staff

TOKYO — The Japanese Ministry for International Trade and Industry (Miti) is "harmonizing" an orchestra of otherwise dissonant commercial players, according to Hideji Sugiyama, deputy director of the Electronics Policy Division of Miti's Machinery and Information Industries Bureau.

As a result, Japan has hoisted itself from the ruins of World War II and become one of the world's foremost industrial competitors, especially in the areas of semiconductor and computer technology.

During a recent interview here, Sugiyama explained that Miti was formed in the aftermath of the war to develop basic, low-technology industries.

"The quality of life of the Japanese people and their ability for research and development was significantly poor," he commented. "Miti's policy was to promote R&D and productivity, especially in such im-

(Continued on Page 76)

Vector Graphic Realigns Top Management

THOUSAND OAKS, Calif. — Less than one month after reducing its work force by 25% to counter large losses, Vector Graphic, Inc. has announced a high-level management shake-up.

Fred Snow, company president and chief operating officer since last June, has been replaced by his boss, company founder Lore Harp, who has assumed the president's role in addition to her duties as chairwoman and chief executive officer of the business microcomputer maker.

In addition, Thomas Harincar resigned as vice-president of finance. Harincar will be replaced, but Harp

(Continued on Page 80)

STC's Profits Continue To Skid

LOUISVILLE, Colo. — Anemic earnings continued to plague Storage Technology Corp. (STC) in the first quarter of 1983, as the company reported a 93% drop in profits compared with the first quarter a year ago.

STC reported profits of $1.15 million or 3 cents per share in the quarter compared with $18 million or 52 cents per share last year. Revenues in the quarter fell 16% to $220 million, compared with $262 million a year ago.

Commenting on the results, Jesse I. Aweida, company chairman, said, "All areas of our business are doing well except for our disk business, which is down because we are changing

(Continued on Page 76)

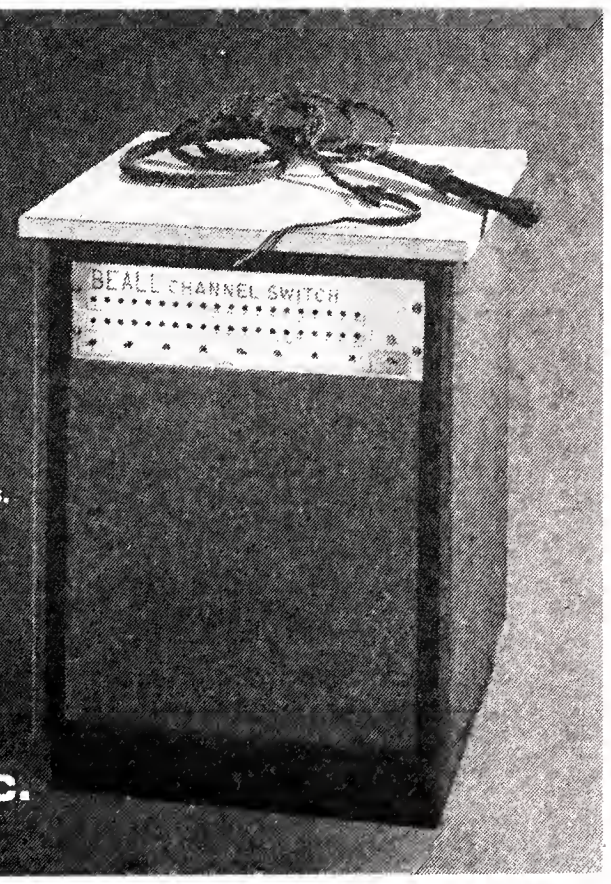
A Simon Legree for Computers

The Beall Channel Switch. Makes computers, peripherals work harder, more effectively. Directs critical on-line services to another CPU when failure occurs. Commands specific peripherals to serve more than one computer. Redrives all CPU signals to give far more flexibility in physical placement of peripherals.

And Beall does all of this less expensively, more reliably and with less opportunity for operator confusion than anyone else.

We make five basic models to provide up to eight switchable interfaces each of which can be logically connected to as many as eight CPUs.

Want to whip up more facts? They're in our new brochure. Write or call for it today.



John Beall & Company, Inc.
9103 Third Avenue ▪ North Bergen, N.J. 07047 U.S.A. • 201/854-3562

USC Computer Law Institute Set for May 11-13

LOS ANGELES — The University of Southern California (USC) Law Center will hold its fourth annual Computer Law Institute here May 11-13.

The two-day seminar will present an in-depth examination of proprietary rights, international antitrust and contract issues controlling the development, sale and distribution of computer products.

The seminar will examine trademark and trade name problems common in the computer industry.

Registration for the seminar is $350 for both days, $240 for one day. More information is available from USC Computer Law Institute, Law Center, Room 105, University Park, Los Angeles, Calif. 90089.

Sugiyama Likens Japan's Success To 'Harmonizing' an Orchestra

(Continued from Page 75)
portant industrial areas as coal and textiles."

The harmonizing to which Sugiyama referred comes into play when Miti sponsors special projects, such as the very large scale integration (VLSI) project conducted between 1976 and 1979. The goal of that project, which took two years to organize, was the development of a semiconductor chip with 1M byte of storage capacity. Although that goal was not realized, Japan has become the first country to develop an experimental 256K-byte chip.

The project brought together five fierce competitors — Hitachi Ltd.; Nippon Electric Co., Ltd.; Toshiba Corp.; Fujitsu, Ltd; and Mitsubishi Electric Corp. — as part of a coordinated effort. "Each of those companies did not have the same interests in the beginning," Sugiyama noted. "Our goal was to harmonize the activity of the private sector by discussion. We are a conductor of the orchestra."

Another goal was the procurement of government funds for the project. To that end, Miti came up with 29 million yen, or about $123,000.

Perhaps Miti's best known endeavor outside of Japan is the Fifth-Generation Computer Project. Started last year, it is working toward the development of a high-speed, knowledge-based computer featuring the function of inference.

Miti secured 400 million yen — approximately $1.7 million — for the fifth-generation project during 1982, Sugiyama commented.

Another well-known Miti-sponsored effort is the supercomputer project. Through it, the Japanese hope to develop a computer that works 1,000 times faster than today's conventional computers.

Asked what lesson the U.S. computer industry might take from Miti, he responded, "One of the factors of the Japanese success is the coexistence of competition and coordination. In the joint VLSI project, they set a common target and coordinated it.

"In the U.S., the R&D of one company cannot coordinate such a project alone," he said.

STC Posts Profit Skid

(Continued from Page 75)
from one product generation to another." STC has not yet begun volume shipments of its 8380 thin-film head disk drive, which will compete with the industry-leading IBM 3380.

This most recent quarter marks the second consecutive one in which earnings plummeted. In the final quarter of 1982, profits fell 75% while revenues increased slightly.

STC has taken several steps to contain costs in recent months. The most recent measure was a layoff of 500 workers at the firm's Colorado-based operation.

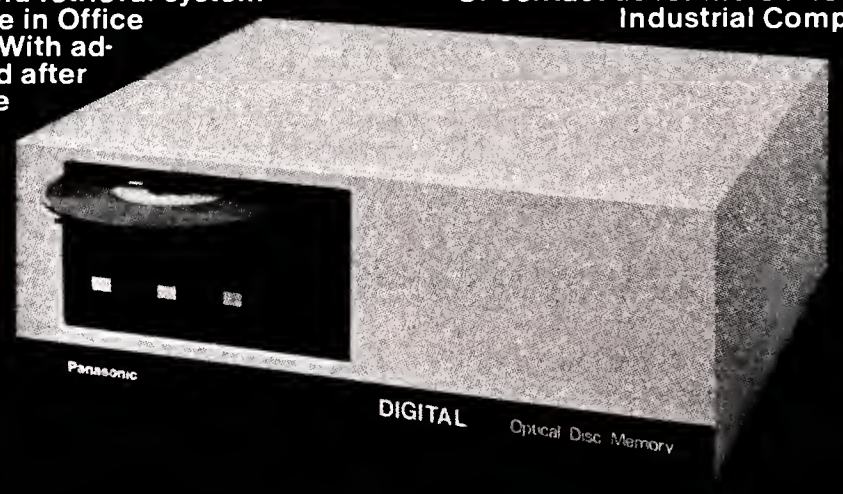
At the time of these layoffs in March, an anticipated strong demand for the company's disk storage products had not materialized.

A breakthrough you can't ignore:

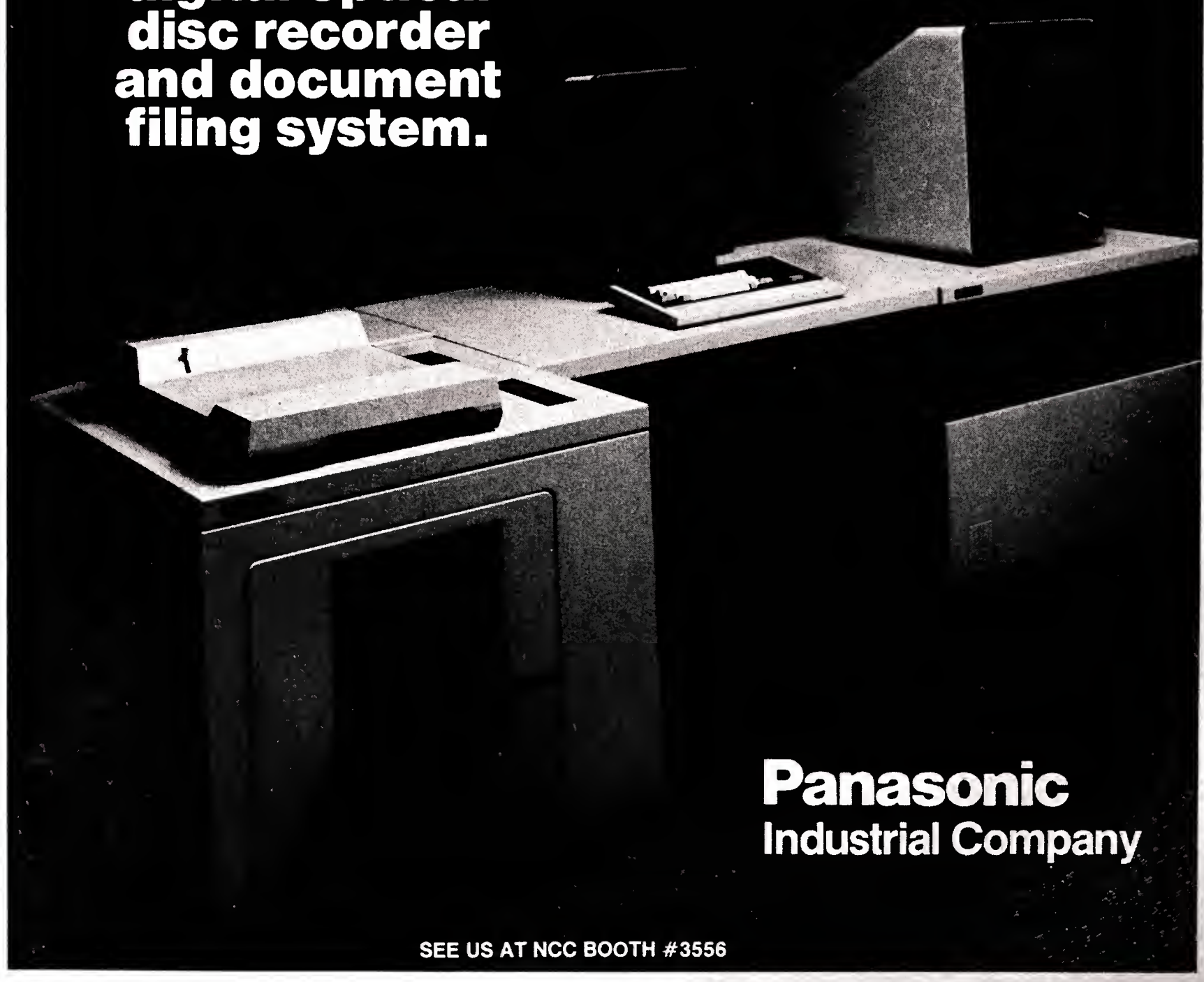
Panasonic announces another breakthrough in optical disc recording: a new-generation digital recorder that's so advanced, it's grabbing the attention of the entire industry.

It's all part of our new Optical Document Filing System, a total storage and retrieval system that heralds the next wave in Office Information technology. With advanced DRAW (direct read after write) capabilities, it's the first system of its kind which can be linked to facsimile lines for instantaneous transmission of recorded information.

To see the system, along with our digital and analog optical disc recorders and the rest of our line of Office Automation products, visit us at NCC. Or contact us for more information: Panasonic Industrial Company, Industrial Sales Division (Video), One Panasonic Way, Secaucus, N.J. 07094; phone (201) 348-8227.



The Panasonic digital optical disc recorder and document filing system.



Panasonic
Industrial Company

SEE US AT NCC BOOTH #3556

Funny how programming grows on you.



Oh, it all starts out innocently enough. A printout here. A reference manual there.

But before you know it, all those papers and books and program listings are sprouting up all over the place.

And if you haven't got a way to keep it all under control, well, you could have a real nightmare on your hands.

The fact is, without an efficient, well thought out approach to managing project materials at your workstation, you can easily waste up to 25% of your time just trying to keep all that information under control.

At Wright Line, that kind of mayhem is one thing we just don't want to see you cultivate. So we offer a unique system of information media management products, including filing devices, cabinets and work surfaces, to help you keep things from getting out of hand.

In fact, nobody else can begin to approach our system for its flexibility or its ability to integrate so perfectly into any workstation environment.

Whether it's a conventional office or open plan furniture.

And because we know everybody works differently, our system is designed to be designed. To let you structure it precisely to your own work style or personal preference.

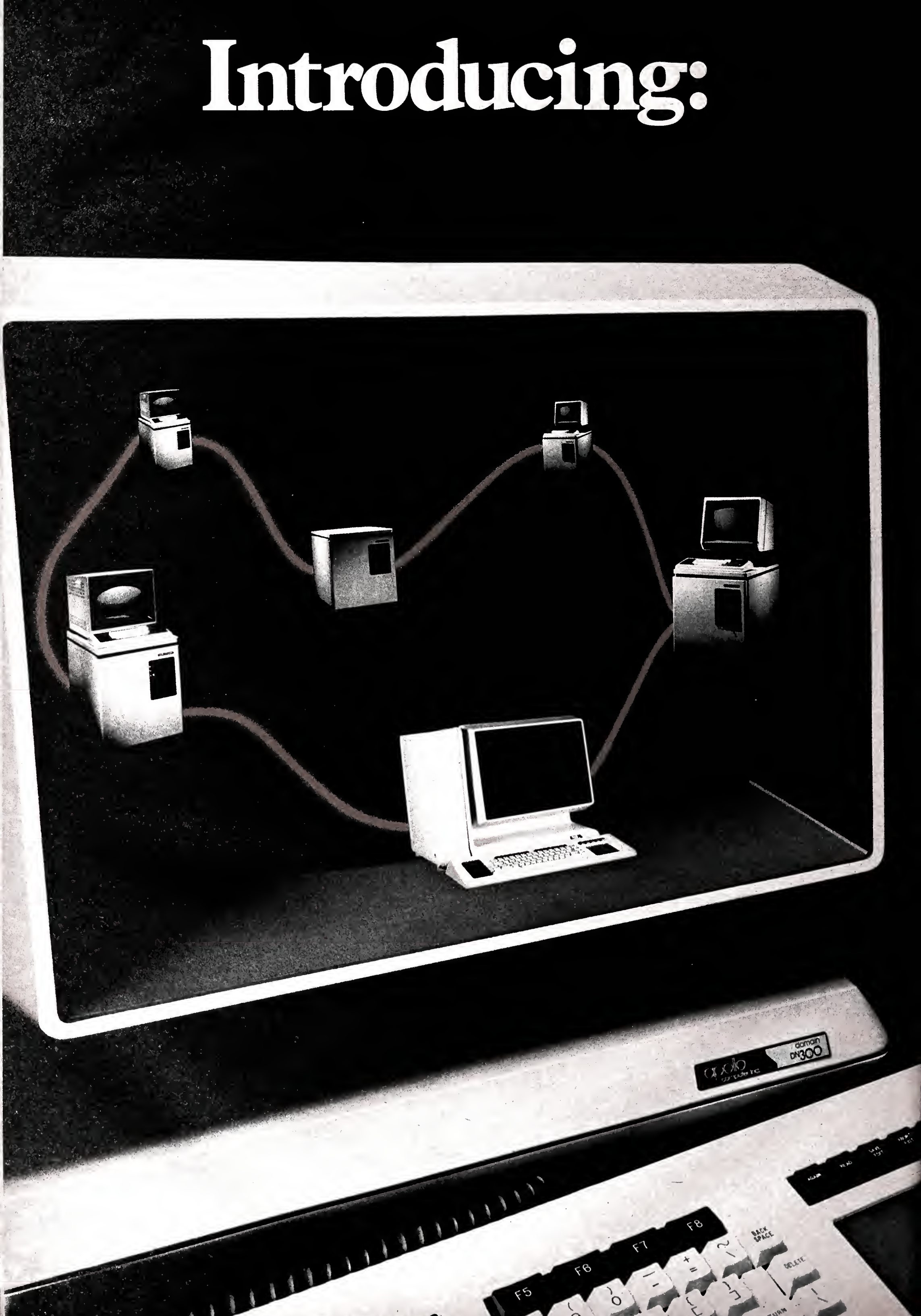
No matter what stage your projects are in — in-process, reference or archival — you get a system that fits you. Which means we can actually help you spend more time working with your media. And less time fighting it.

So, if your workstation seems like a bad dream, let us know. Before things start getting under your skin. For more information contact Wright Line, 160 Gold Star Boulevard, Worcester, MA 01606.

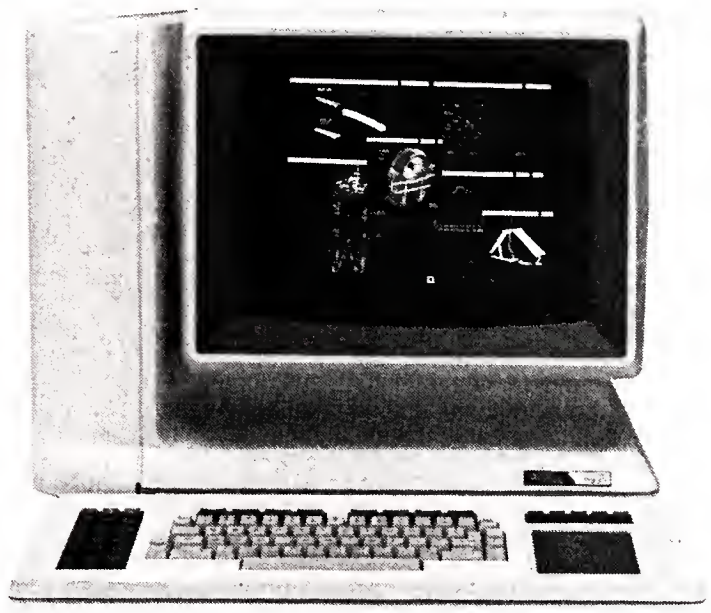
Wright Line
A UNIT OF BARRY WRIGHT



Introducing:



the $10,000 desktop mainframe.



THE NEW APOLLO DN300 WILL COMPLETELY CHANGE THE WAY TECHNICAL PROFESSIONALS USE COMPUTERS.

The DN300 is quite possibly the single most important computer system ever introduced for the technical professional. For the first time ever, these technical professionals have fingertip access to a desktop mainframe, and all the power that goes with it. The power to utilize time in the most efficient possible way. The power to increase technical productivity and innovation. The power to try out and refine new ideas and concepts. The power to reduce design-time cycles. The power to create better, more cost-effective products.

In a unit that takes no more space than a daily newspaper, the DN300 gives you a high performance, 32-bit virtual memory processor, high-resolution bit map graphics, and an integrated local area network that provides network-wide virtual memory access.

The DN300, latest in the family of DOMAIN processing nodes, supports up to 1.5 million bytes of main memory and 15 concurrent processes of 16 million bytes each, so you can execute large programs. Its 17-inch 1024 x 800 pixel landscape display provides the high-resolution graphics you need for technical applications. The 12 million bit-per-second high speed token-passing network lets you access data anywhere in the network without sacrificing performance. And the DN300 is supported by an optional local hard disk as well as a full complement of network peripherals and gateways.

The DN300 is fully compatible with Apollo's DN400, DN420, and DN600 color computational nodes and supports the same multiprogramming environment, large virtual address space, network communications, multi-window display management, and extensive command library as other DOMAIN nodes. The DN300 connects directly and easily to any new or existing Apollo DOMAIN network. Or it can be used as a standalone workstation. Which means that you can configure the type of network that exactly suits your staff and working environment.

SOFTWARE YOU NEVER THOUGHT YOU'D SEE ON YOUR DESKTOP.

Standard with every DN300 node is AEGIS, the only network-wide virtual memory operating system available today.

Optional software includes ANSI-standard FORTRAN 77, Pascal, C, SIGGRAPH Core Graphics Library, X.25, IBM HASP, IBM 3270, D3M distributed database management system and AUX, a software environment based on UNIX™ System III.

More than 50 available third party application software packages include MSC/NASTRAN and ANSYS, two highly regarded finite element analysis programs; PATRAN-G, an interactive finite element pre- and post-processor; SCRIBE, a text formatting and document production system; and DISSPLA and TELL-A-GRAF, the leading data representation graphics software packages.

NEW DOMAIN SERVER PROCESSOR—A LOW COST WAY TO HANDLE NETWORK PERIPHERALS AND GATEWAYS.

The new DSP80, an intelligent peripheral server that connects to the Apollo DOMAIN network, lets users freely share the same, centrally located peripherals. That relieves individual nodes of the burden of peripheral support. So nodes have more time and more power available to handle specific application-related computing.

And you save money by sharing your expensive peripherals—disks, tape drives, printers and plotters. The DSP80 also provides every user with access to specialized services such as communication gateways, large-scale file storage, and print/plot spooling.

USA price $9,933, system builder, quantity 35 DN300 with .5Mb memory, 17-inch graphics display, network interface, and AEGIS operating system.

UNIX is a trademark of Bell Laboratories.

ANSYS is a registered trademark of Swanson Analysis Systems, Inc.

DISSPLA and TELL-A-GRAF are registered trademarks of Integrated Software Systems Corporation

SCRIBE is a registered trademark of UNILOGIC, Ltd.

FIND OUT MORE ABOUT THE DN300 DESKTOP MAINFRAME.

The Domain network gives you low entry cost, high performance, easy and natural incremental growth, reliability, and long-term investment protection. And it gives your technical staff the excitement and satisfaction of working with an innovative, highly productive new tool. For more information on the Apollo Domain processing system, call Apollo's marketing department at (617) 256-6600, extension 608, or write Apollo Computer Inc., 15 Elizabeth Drive, Chelmsford, MA 01824, attention Marketing Communications.

☐ Send me more information on Domain Processing.
☐ Please have a sales representative call me.

Name

Title

Company

Street

City

State

Zip

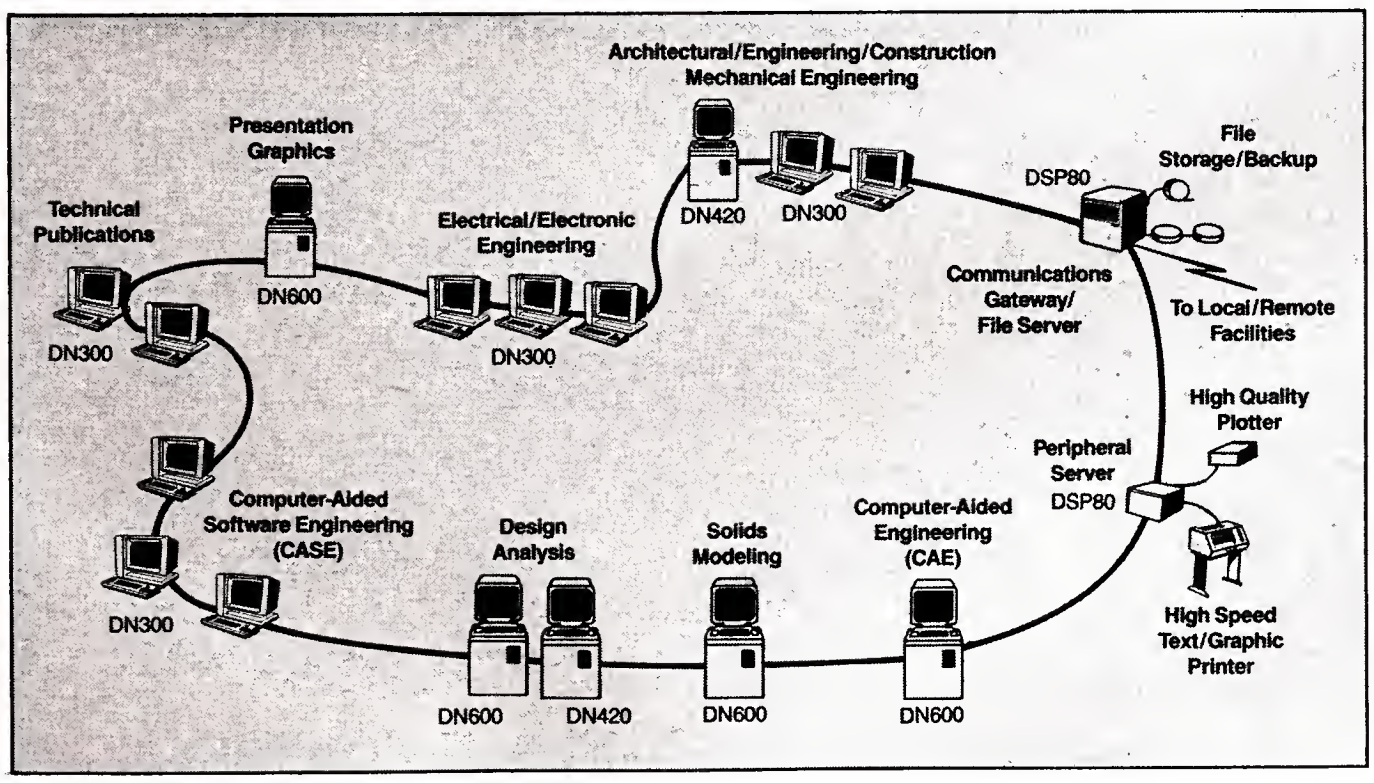
Telephone

Apollo Computer Inc.
15 Elizabeth Drive, Chelmsford, MA 01824

A Domain professional productivity network puts an application specific mainframe on every user's desktop.

The truly exciting aspect of a Domain network is its ideal combination of individual initiative and teamwork. Users get not only the benefits of a high performance, 32-bit computer dedicated to their application, but also retain the benefit of shared resources.

For example, use the DN600 full color graphics computational node for solids modeling, VLSI CAD, finite element analysis, pre- and post-processing, 3-D drafting, and image analysis. Or use it as a full-function CAE workstation . . . The DN420 and DN400 handle the same applications except in monochrome. Use the economical new DN300 desktop mainframe in applications such as computer-aided software engineering, design documentation, high-quality presentation graphics, engineering and manufacturing database management, drafting, and electrical design capture and simulation.



apollo computer inc.

Domain: The Next Generation

Would Merge Policy Functions

Commerce Endorses Trade Department Concept

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The Reagan administration has formally endorsed the concept of a cabinet-level department of trade, which would merge the trade policy functions of the U.S. Trade Representative's Office and the trade agencies of the Commerce Department.

DP industry representatives generally have been noncommittal about the trade department concept, which has been discussed here for a number of years. One industry spokesman remarked that it is the policy that is important, not the agency that carries it out. The administration plan may be "more form than substance," he suggested, noting it would create an even bigger bureaucracy for trade matters than now exists in the Commerce Department.

But the plan is not without support, and several bills now pending in Congress would mandate a similar trade reorganization, although there are differences among the various proposals. Also, the administration's plan is still far from complete. Left undecided is what to do with other Commerce agencies, such as the National Telecommunications and Information Administration and the National Bureau of Standards, if the Commerce Department is dissolved.

Commerce Secretary Malcolm Baldridge, presenting the plan at an April 25 White House press briefing, said details of the plan would be worked out in consultation with Congress. The new trade department, as currently envisioned by the White House, would consist primarily of the present Trade Representative's Office, now part of the Executive Office of the President, plus the Commerce Department's International Trade Administration.

Baldridge said the reorganization is needed because "at present, trade responsibilities are scattered over several major cabinet-level agencies. Because responsibility is diffused, the decision-making process is at times difficult," he said.

Stratus Gives Supplier Cuts

NATICK, Mass. — Stratus Computer, Inc. has announced a marketing program designed to provide cash incentives to systems houses that convert and sell their application software for use on the company's Stratus/32 Continuous Processing System.

Software suppliers accepted under the program will receive a fee for each new Stratus/32 sold to run their software. The fee schedule will increase over a two-year period in proportion to the aggregate value of the Stratus products sold, with a typical fee of about 12% of the end-user selling price, the vendor said.

The program is intended to encourage sofware houses to acquire Stratus computers by offering a 25% discount on Stratus products.

Stratus is at 17 Strathmore Road, Natick, Mass. 01760.

Steady Increase in Semi Orders Bodes Well for Industry Recovery

(Continued from Page 75)

looking pretty good a year ago, then came the summer and the roof fell in on us," Hinkelman said in a telephone interview.

"But orders started rising in November and have continued each month since then," he said. "April's figures are sustaining that. We feel that orders will continue to rise throughout the year. This must mean good news for the entire computer industry."

The good news is in sharp contrast to the sluggish performance of the semiconductor industry in 1982, when year-end sales of $9.4 billion were up only 1% over 1981. Vendors like National Semi and Texas Instruments, Inc. were forced to lay off several thousand workers, while other companies such as Intel cut employee wages or work weeks.

Nonetheless, sales continued to grow, although slowly. But chip sales are one thing, while profits have proven to be quite another. With the exception of Advanced Micro Devices, Inc., the major U.S. semiconductor makers have reported bleak earnings. Intel's big quarterly increase just reported is in relation to a very poor quarter a year ago.

In brief, the chip makers have been hit by a one-two punch of depressed demand and stiff price competition from the Japanese, both of which have driven chip prices into the ground. Thus, while most chip makers have reported increased sales, profit margins have been devastated.

SIA's Hinkelman and vendor spokesmen agreed that prices should stabilize as demand increases, restoring something resembling normal profits to the industry.

But some industry observers have warned against an overly optimistic interpretation of the recent sales and orders figures.

James Magid, analyst with L.F. Rothschild Co., Unterberg, Towbin, Inc., said, "There has been no upturn in computer business or user activity that would account for this increase in semiconductor orders, and it is not an indicator of economic recovery. An economic revival is occurring, but these figures are not a sign of it."

Magid said special factors explain the recent growth in semiconductor orders, including a normal restoration of inventories and the fact that Motorola, Inc. had to recall huge amounts of 64K-byte memory chips. This recall, Magid said, caused panic buying for those chips.

Seth Goldwin, analyst with Paine Webber Co., said the order increase has been prompted by distributors selling to small system makers, not to vendors of mainframes and the bigger minicomputers.

"There will be no real pick-up in semiconductors unless there is a sustained increase in sales of mainframes and minicomputers," Goldwin said. Sustained growth among the big system makers will be stimulated only by more capital spending.

This announcement appears as a matter of record only.

$7,000,000

sytek

Sytek, Inc.

Convertible Preferred Stock

The undersigned arranged for the private placement of these securities with institutional investors.

HAMBRECHT & QUIST
INCORPORATED

New York San Francisco London
Los Angeles Menlo Park

March 1, 1983

CICS BOOKS

CICS Command-Level Ref. Guide for COBOL Programmers

- Explanations & Examples of Commands
- Programming Hints & Abends

Send $11.00 (add $.55 in MD)

"INTRODUCTION TO CICS PROGRAMMING"
- takes the mystery out of CICS
- develops a Command Level COBOL application
- illustrates CICS tables, VSAM/AMS, and BMS

To order, send $29.95 (add $1.50 tax in MD).
Also Available At: DALLAS: Book Merchant; DC: American Univ., Md. Book Ex., Reiters; HOUSTON: Majors; LA: OPAMP, Tech. Book Co., NY: Pace Univ., SF: Golden Gate Univ.

CICS TRAINING

At your site or ours:
- Hands-on Command Level Coding (over 25 companies have participated).
- CICS Application Design
- VSAM for COBOL Programmers

CICS SOFTWARE

CICSDOC
- Cross-references PROGRAMS to DATASETs, MAPSETs, COPY members, other PROGRAMS, and TRANSIENT DATA
- Matrix of all TRANSACTIONS/SECURITY KEYS
- All USERS to TRANSACTIONS
- All TRANSACTIONS to USERS

POTOMAC SYSTEMS GROUP, INC.

(formerly MV Associates)
P.O. Box 4157, Chevy Chase, MD 20815
(301) 762-9108

DPers to Buy Computermart Concept: IBM Exec

By Bob Johnson
CW New York Bureau

NEW YORK — It may not be like spending a day at the supermarket, but DPers will probably be shopping for their computer needs in "computermarts" in the not-so-distant future.

That is the view of Fred Fishman of IBM's National Accounts Division, who spoke here recently at a Yankee Group seminar on new computer marketing strategies. IBM has signed a lease with Boscom, the proposed computermart in Boston, to exhibit virtually all of its product line, Fishman said.

Research funded by both Boscom and IBM supports the need for and probable success of these giant computer product supermarkets. They are likely to attract users and sellers of computer equipment from most sectors of the information industry, Fishman said. But while the likelihood of success for this new concept is apparent, in reality it is difficult to determine just how successful the computermart will be because none exist in the proposed form today.

Essential Elements

In an attempt to guage what impact computermarts will have on the industry, Fishman offered IBM's view of what will be housed under their roofs. He said that the essential elements of the computermart will consist of sellers, including resellers, value-added resellers, distributors, dealers, manufacturers, suppliers and independent computer services; available computer and communications product vendors; and buyers made up of end users who buy in volume, professional end users (groups brought in by organizations that target specific consumers) and unscheduled end users (those brought in by general promotion).

Although many people think of the computermart concept simply as a trade mart — and in terms of displaying industry-specific products, the view is correct — the computermart will exist not only for the traditional reseller or dealer, but for the end user as well.

"In a way it will be another shopping center offering retail sales with clusters of competitors, but the essential point to understand is that professional user groups, such as the American Bankers Association, will be brought in by the programmatic organizations offering potential sales to customers grouped by interest," he said.

However, "the computermart will not replace the normal computer product distribution methods like the direct sales force, dealers, value-added remarketers and retail outlets, but will complement them," he maintained.

In an attempt to forecast whether computermarts will attract the interest of buyers and sellers, Fishman cited Boscom-funded research which showed that the declining cost of computer products is drawing more buyers, thus satisfying the first criterion for success.

Noting that another key to the success of trade marts is the need for independent suppliers, Fishman said the Boscom study revealed that the DP industry's evolution toward standardization is lowering the cost for independents to enter the business.

Frequent product model and style changes are also necessary for a successful trade mart, according to the Boscom research, and the DP industry's dynamic product line fills that requirement. The final measure of success according to Boscom, Fishman said, is the need to demonstrate products. The study showed that the growth and change occurring in DP dictate that products be both demonstrated and advertised and concluded that a market need for a U.S. information trade mart will exist in the 1983-85 time period.

The computermart's impact on the volume end user and vendor was also measured in the Boscom research, which found that 65% of top DPers at major companies with a median DP budget of $500,000 would visit a computermart.

IBM Research

From IBM-funded research on computermarts, during which user focus groups were held and vendors were interviewed in both Boston and Dallas, "we learned from vendors that the high costs and the complexity of selling products in computermarts represent problems with the idea," IBM's Fishman maintained, adding, "but because they feel all of their competitors will be in the marts, they said they would be also."

The IBM research found that end users see the computermart concept as a "huge circus," which is a bad atmosphere in which to make decisions, Fishman said. However, both vendors and users view the marts as being better places to see products than trade shows.

"The computermarts were perceived as being useful for replacing demos and also good for showing low-end systems," Fishman said. He added that the key to the appeal of computermarts is the anticipated speed with which the buying process can be made.

The IBM study concluded that end users will definitely go to computermarts and that most vendors will participate, Fishman said.

In 1967, there were only about 10 computer manufacturers in the United States.
Today, there are about 400.

How does a buyer find the right one?

ANNOUNCING THE COMPUTERWORLD BUYER'S GUIDE SERIES.

In 1983, *Computerworld* will be introducing a series of market-specific Buyer's Guides. Complete and concise, these guides will offer detailed, all-inclusive listings (we've sought out *every* company) and up-to-date information (right from the manufacturer), gathered by International Data Corporation (IDC), the world's leading industry market research firm.

Each guide will cover a particular product area in the computer industry with extensive company and product information as well as editorial on product trends, new technology and handy referral charts. All presented in a manageable, easy-to-use format.

As a *Computerworld* subscriber, you'll find these guides invaluable tools in locating the right supplies for your needs.

As an advertiser, you'll find the guides a uniquely powerful vehicle for telling your story to executives at the moment they are actively seeking vendors. Make sure your ad is there (along with your free listing) to tell your story and complete your sales call.

The ***Computer Systems Buyer's Guide,*** with everything from micros and desktops for business to mainframes, will be the first in our series for 1983. It will be sent exclusively to the more than 110,000 *Computerworld* subscribers in the United States, as will all the guides in the series.

Watch for the additional Buyer's Guide from *Computerworld* in 1983: ***Terminals & Peripherals*** and ***Software.***

For more information on advertising in any of our new Buyer's Guides, call your local* Computerworld *sales representative.

COMPUTERWORLD BUYER'S GUIDES

BOSTON/Chris Lee, Ed Marecki, Joe Fitzhugh, Jim McClure, Kathy Doyle, Diane Sukey, *(617) 879-0700*
CHICAGO/Art Kossack, Newt Barrett, Jean F. Broderick, Chris Lee, *(312) 827-4433*
NEW YORK/Mike Masters, Doug Cheney, Ray Corbin, Joan Daly, Fred LoSapio, Gale M. Paterno, *(201) 967-1350*
ATLANTA/Jeffrey Melnick, Mike Masters, *(404) 394-0758*
SAN FRANCISCO/Bill Healey, Barry Milione, A. G. Germano, Theodora Franson, Ruth Gordon, Eileen Dunn, *(415) 421-7330*
LOS ANGELES/Jim Richardson, Bob Hubbard, Beverly Raus, *(714) 556-6480*

Xerox Head Advocates 'Advanced Control Systems'

By Paul Gillin
CW Staff

CHICAGO — The hope for American manufacturing lies not in wage competition but in achieving "greater productivity through advanced control systems to which management is completely dedicated," according to Haig M. Bazoian, president of Xerox Computer Services.

In a recent interview here, Bazoian said that although American business lags behind the Japanese on the assembly line, it still leads the world in planning systems. Bazoian, who recently toured a number of Japanese businesses, said he sensed that "Japanese managers are worried about the threat from Southeast Asia and about the U.S. catching on to some of their methods.

'. . . Business may have to bite the bullet and scrap large parts of its installed software. More than 60% of user software is over five years old and more than a third is over 10 years old.'

"Clearly where the Japanese have made the most progress is in the area of repetitive [continuous assembly line] systems," he said. "Now they're turning to us to step back and do better planning."

Bazoian praised the "strong feeling of a company working as a family" that he discovered in Japan. He said one Fuji Electronics factory claimed that 232 ideas had been submitted per employee in 1982. "There was high visibility and open communication between all parts of the business," he said. "The sense you got was that all are in tune with what is happening in the company."

As the U.S. has begun to adopt many of the Japanese management techniques, the stage has been set for a dramatic marriage of advanced planning and production techniques, he said.

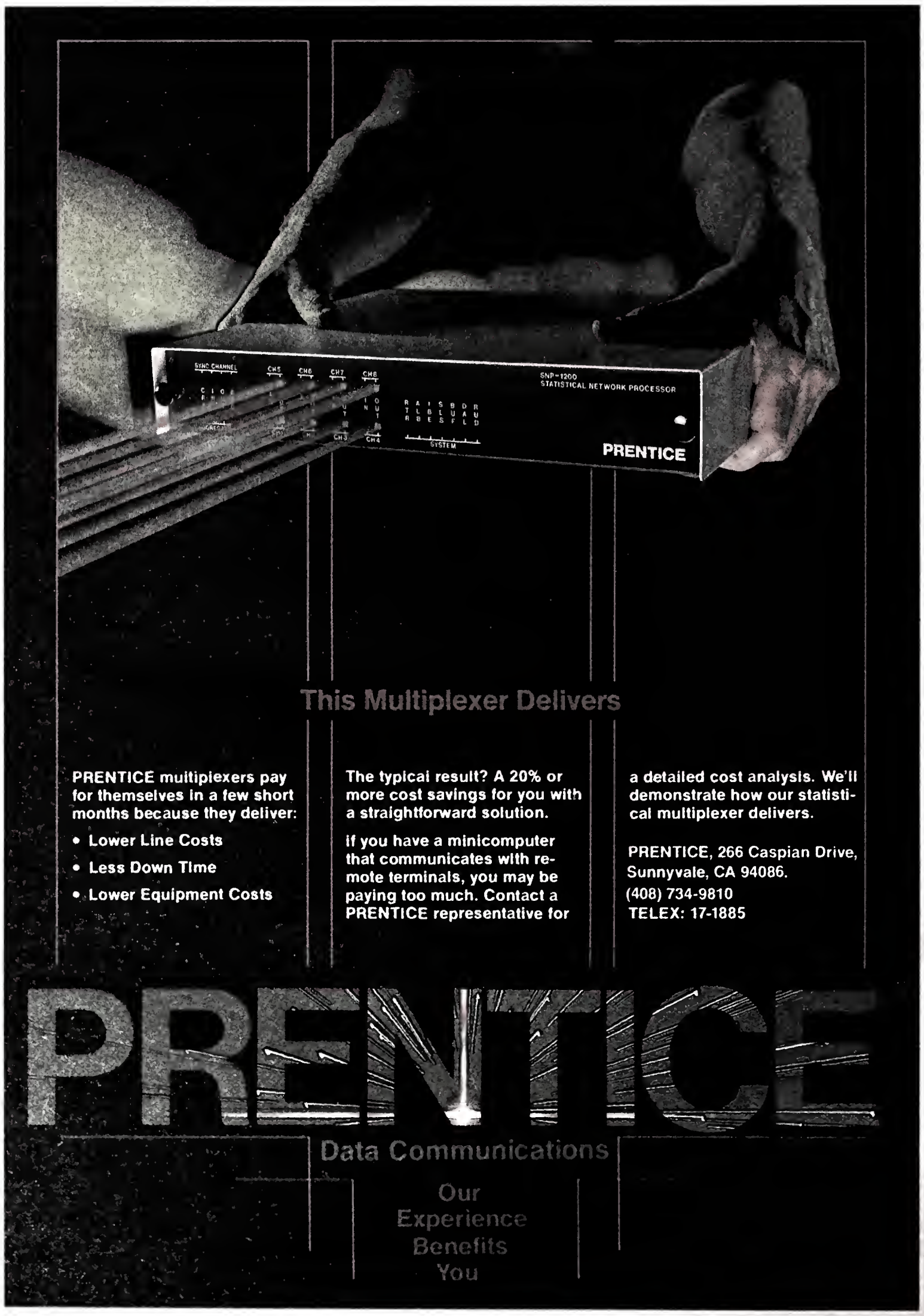
But in order to achieve that, business may have to bite the bullet and scrap large parts of its installed software. More than 60% of user software is over five years old and more than a third is over 10 years old, he said.

"What you've got is a patchwork," he said. "I am now running into more and more [management information systems] managers who are looking into the possibility of throwing it all away and starting over."

MIS managers are going to have to become effective salesmen in order to convince top management that the software is obsolete, Bazoian said. However, most are still not getting their point across because "it is very difficult to describe in business terms what is wrong," he said. "MIS managers have to get close to the user to identify the business needs," he claimed.

"They have to look at business problems, not DP problems, then go to management and say what is the benefit and value of the new system.

"In a lot of companies, MIS is still viewed as working for finance" and not for strategic planning or manufacturing, he added.



Vector Realigns Top-Level Brass

(Continued from Page 80)

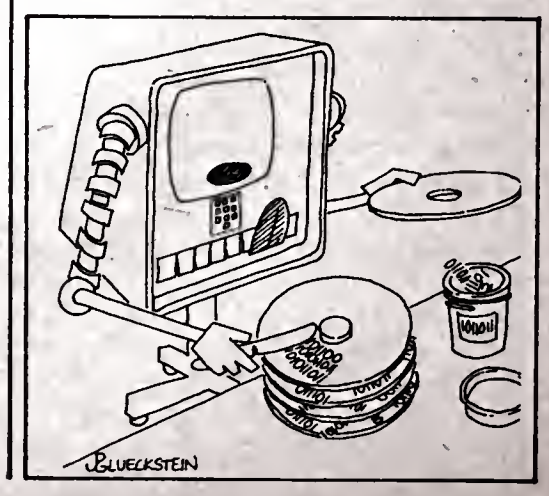
will remain as president indefinitely, the company announced. A company spokesman would not comment on whether Snow had resigned or been fired, saying only that Snow "has left the company."

The changes came in the wake of a company prediction that it would lose nearly $1 million in the first quarter of this year, a loss some analysts had attributed to management changes made in the past year at Vector Graphic [CW, April 11]. The losses further prompted the company to cut the pay of top corporate officers.

Commenting on the shake-up in a prepared statement, Harp said, "We need to get back to the close, hands-on management style that made us one of the most successful of the early business computer companies.

"In order to capture some of our earlier drive, enthusiasm and financial strength, I want to get back to directly running the company so that I can quickly identify and rectify any continuing problem areas," she said.

Vector Graphic had grown rapidly through mid-1982, when it began experiencing delays in shipping its Vector 4 microcomputer. The company's product line has also battled the stiff competition of mainframe companies that have announced business micros and then competed with Vector Graphic for shelf space in computer stores.



Micros Erode Traditional Business Base

Time-Sharing Seen Facing Sweeping Changes

By Paul Gillin
CW Staff

CHICAGO — The computer time-sharing industry will go "through wrenching kinds of changes" in the next few years as microcomputers and packaged applications begin to erode the industry's traditional business base. Vendors that have relied on providing raw time and engineering-type applications "are going to be in trouble" as cheaper hardware muscles in on their territory.

So stated Haig M. Bazoian, president of Xerox Computer Services, in a recent interview here.

"When a job can be done more economically on a personal computer, time-sharing will be hit very hard," the executive said. "But where there are applications that are specific and difficult to replicate, time-sharing will grow."

Xerox Computer Services has been involved in time-sharing since 1970 and has reached annual revenues of nearly $100 million, Bazoian said. About four years ago, the company began offering packaged financial applications for IBM and Digital Equipment Corp. VAX-11 computers.

Sweeping Changes

Within the last six months, Xerox has expanded into manufacturing software and added a range of end-user-oriented products targeted toward information centers.

Such sweeping changes in the vendor's product line are indicative of the software industry as a whole, which is moving sharply toward packaged applications, Bazoian said.

"If I were a [management information systems] manager today and the alternative was developing in-house, I'd want to go with packages," Bazoian said. "Data base management systems [DBMS] and other fourth-generation tools have made it easier to make [the necessary modifications] in-house," he added.

Intense competition is developing in the packaged software field as vendors scramble to enter the market from diverse positions, Bazoian said. He sees the potential for time-shared vendors to take advantage of their traditionally solution-oriented function to capture a lead as providers of "total solutions."

"You can go to different companies and get a whiz-bang DBMS, whiz-bang [manufacturing resource planning system] and whiz-bang financial systems," he said. "With us, you won't get the best of all worlds, but you'll get the information needed to manage the business."

The future time-sharing market will boil down to two types of customers, he predicted: smaller businesses who do not want to build DP departments and other companies making involved transitions to new information systems designs. Under the second scenario, "you can break the problem [of implementing a new information system] into two parts," Bazoian said. "You spend the first part getting the users educated and trained while running on time-sharing, then you move the new system in-house."

With that justification, Xerox will increasingly use its time-shared experience as leverage to convince buyers to go with its packaged software, Bazoian said. The company recently overhauled its equipment devoted to time-sharing, replacing Xerox Sigma computers with IBM 3033s and a 3083 mainframe and an Amdahl Corp. V8.

At the same time, the company is targeting packaged applications to constitute nearly half its business by 1986. "Two-and-a-half years ago, when software was a small part of the business, I said 35% to 40% of our business could be software within five years," he said. "So far we're right on that track."

Buy smarter.

Lease.

Now you can get all the new data products you need immediately, even with a limited capital acquisition budget—by leasing or renting from United States Data Systems.

Since we're backed by U.S. Leasing, the company that virtually invented leasing, we can write leases that others wouldn't think of writing. (The term can be as short as one month!)

Often you can get the equipment in 24 hours. It comes with 100% financing, at the lowest monthly rates possible. And we back all our products with a full range of service options, including on-site and depot repair.

When you lease, obsolescence becomes a thing of the past. Best of all, leasing lets you treat the acquisition cost as an operating expense, instead of a capital expenditure. That's gentle on your budget.

When you add it all up, leasing from United States Data Systems could be the smartest buy you'll ever make. For more information, call the sales office nearest you, or contact United States Data Systems Corporate Offices, 2988 Campus Drive, San Mateo, California 94403, 415/572-6600.

United States Data Systems
A U.S. Leasing Company

Nobody offers more.

ALABAMA (800) 241-2146
ARIZONA (800) 326-9395
ARKANSAS (800) 527-4426
CALIFORNIA
Burbank 213/841-9801
Los Angeles 213/622-9443
Orange Co 714/634-2024
San Diego 619/695-2714
San Mateo 415/579-1001
US LEASING
COLORADO
Denver 303/850-7231
CONNECTICUT (800) 221-0629
DELAWARE (800) 638-2021
DISTRICT OF COLUMBIA
301/258-0220
FLORIDA (800) 241-2146
GEORGIA (800) 282-5988
Atlanta 404/951-1900
ILLINOIS
Chicago 312/981-1607
INDIANA (800) 323-7961
IOWA (800) 323-7961
KANSAS (800) 323-7961
KENTUCKY (800) 323-7961
LOUISIANA (800) 527-4426
MAINE (800) 343-0393
MARYLAND
Gaithersburg 301/258-0220
MASSACHUSETTS
Boston 617/246-4007
MICHIGAN (800) 323-7961
MINNESOTA (800) 323-7961
MISSISSIPPI (800) 241-2146
MISSOURI (800) 323-7961
NEBRASKA (800) 323-7961
NEVADA (800) 526-9395
NEW HAMPSHIRE
(800) 343-0393
NEW JERSEY
Edison 201/549-2350
NEW MEXICO (800) 526-9395
NEW YORK (800) 221-0629
NORTH CAROLINA
(800) 638-2021
OHIO (800) 323-7961
OKLAHOMA (800) 527-4426
OREGON (800) 526-2911
PENNSYLVANIA
(E) (800) 638-2021
(W) (800) 323-7961
RHODE ISLAND
(800) 343-0393
SOUTH CAROLINA
(800) 241-2146
TENNESSEE (800) 638-2021
TEXAS (800) 442-4186
Richardson 214/680-8887
UTAH (800) 526-9395
VERMONT (800) 343-0393
VIRGINIA (800) 638-2021
WASHINGTON (800) 526-2911
WEST VIRGINIA
(800) 638-2021
WISCONSIN (800) 323-7961
WYOMING (800) 526-9395
INSTRUMENT RENTALS
CANADA (800) 268-4928
Mississauga Ontario
416/678-7831

© 1983, United States Data Systems

Super Shorts

The **North American Telecommunications Association** has formed two new committees — the Regulatory and Legislative Policy Committee and the Centralized Operations Group Steering Committee — to address deregulation and divestiture issues.

* * *

Northern Telecom, Inc.'s SL-1 digital business communications system has been granted type approval by the Japanese government telephone authority. With type approval, SL-1 systems may now be used in the Japanese public telephone system.

* * *

Ramtek Corp. has formed a marketing administration group to handle all administrative functions for the firm's recently realigned sales and marketing operations. Linda Kroening has joined the firm as manager, corporate communications, and Dan Burkhalter will head up marketing administration.

* * *

Southern N.E. Telephone has exercised its option to buy 40% of **Digital Termination Services, Inc.,** the firm authorized by the Federal Communications Commission to build and maintain local network facilities for high-speed digital transmission between customers in 99 large U.S. cities.

* * *

RCA Service Co. will market **Hitachi America Ltd.'s** digital communications controller under a recently signed $8.5 million agreement. Promotional efforts will focus on Hitachi America's hotel/motel software application of the digital private branch exchange.

Intersil, Inc. and **Teledyne** have settled the copyright infringement suit, filed by Intersil in U.S. District Court in Aug. 1982 relating to its line of analog-to-digital converter integrated circuits, with an agreement to exchange license rights and technology.

Executive Corner

• **Steven D. Dorfman** has been appointed president and chief executive officer of Hughes Communications, Inc.

• **Guy R. Tann** has been appointed president and chief operating officer of Automated Processing & Development Corp.

• **William L. Sydnes** has resigned from IBM to join Franklin Computer Corp. as vice-president of engineering. Sydnes was development manager for the IBM Personal Computer and program manager for entry-level personal systems with overall management responsibilities for engineering, manufacturing and marketing at the time of his departure from IBM.

• **Howard A. Laffler** has been appointed president of ITT Business Communications Corp., formerly ITT Terryphone, in Harrisburg, Pa.

• **E.J. Watson** has been named president of National CSS, Inc.'s systems software division, TSI International.

• **John F. Horton** has been appointed vice-president, federal systems operations, and **Michael S. Battaglia,** vice-president, Mid-Atlantic operations, for Sperry Corp.'s computer systems operations.

• **Gerald E. Rodta** has been promoted to vice-president, marketing programs, at Prime Computer, Inc.

• **Philip P. Carvey** has been named vice-president of research at Ztel, Inc.

• **Paul F. Brauneis,** comptroller of M/A-COM, Inc., has been named a vice-president of the company.

• AT&T has appointed **Richard A. Romano** vice-president, regulatory affairs, and **John F. Fischer,** vice-president, industry affairs, for the new organization that will provide long-distance and international services following the Bell System divestiture on Jan. 1, 1984.

• IBM Vice-President **Paul J. Kofmehl** has been elected president of IBM World Trade Europe/Middle East/ Africa Corp.



The GE 2120 teleprinter's text editor makes time-sharing unmistakably economical.

Economical because the 32K text editor reduces time-sharing costs by allowing you to prepare your data, make revisions and create your format off-line to reduce computer time and communication charges by as much as 70%. And at the same time edit out costly mistakes.

With the optional GE 2120 32K text editor, you pay for your computer and communication lines only while transmitting at selectable 110 to 9600 baud. It's the best way to save time in time-sharing.

The 32K text editor also provides the same off-line advantages for networking. So you can accumulate data, edit and format before transmitting to other stations in your network.

With 150 cps, a simple to use color coded, annotated keyboard which allows format programming, easy to read digital LED display that gives you printer parameters, print position, self-test diagnostic readouts and error messages all in plain English...the compact, lightweight GE 2120 teleprinter delivers the flexible, reliable performance you need at a price you can afford.

General Electric. We introduced the first fully electronic printer with LSI circuitry in 1969. And our complete line today makes us the industry leader you should look to first.

First In Electronic Printing.

For the solution to your printing needs, call
TOLL FREE 1-800-368-3182

See us at the NCC. Booth S5018

General Electric Company, Data Communication Products Department A321, Waynesboro, VA 22980. In Virginia, call 1-703-949-1170.

GENERAL ELECTRIC

France's Social Agenda For *Le Computer*

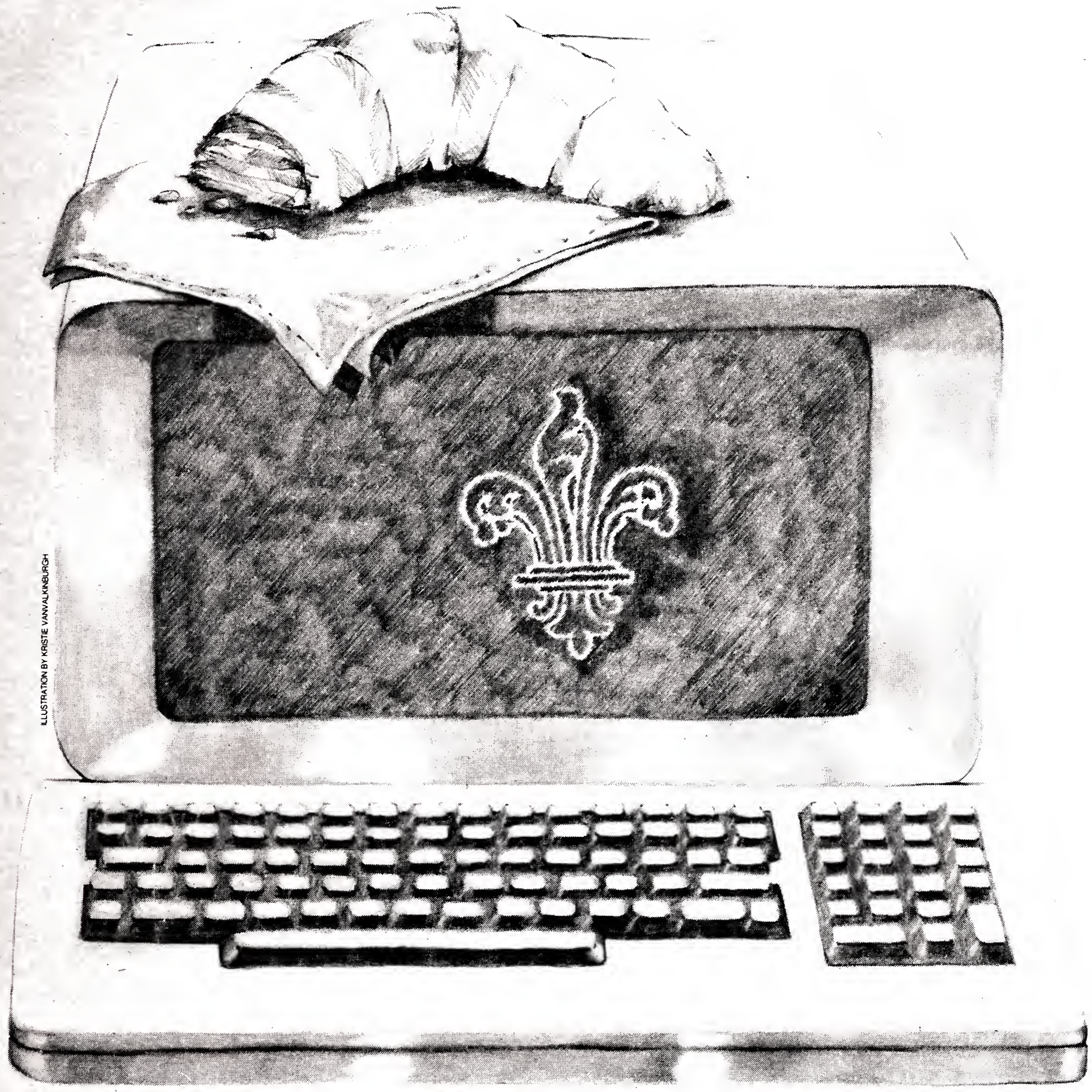


ILLUSTRATION BY KRISTIE VANVALKINBURGH

By Rex Malik

If the Japanese are setting the technological agenda for computing in the next 10 years, the French can be said to be fixing technology's social schedule.

Technology in France is not being left to evolve by market forces. The country is anticipating its future and steering the industries involved down specific routes. The French have an end in view, a society in which technology and industry serve social goals. These ends are quite different from those that France and other industrial societies have pursued in the last three decades.

France is the one country that has managed to deeply involve its politicians, industrialists and civil servants in the opportunities and complex problems that computing raises. These leaders are trying to work out what can, will and should be different about society in an era of inexpensive mass computing. The prevailing view is that computing is turning out to be so fundamental that it is transforming industrial society. Yet no one is quite sure exactly how and where the transformation will take place. The French feel they must investigate technological change, organize and plan for it.

But why should France take the different path? Cannot market forces be expected to direct society here as elsewhere? Few of those leading France have patience with this

approach. The majority of those in power point out that at the development, manufacturing and sales levels, the world of computing is dominated by American companies with their large home market to support them. Thus, the world computer marketplace does not provide a competition between equals. France, said a noted French thinker discussing technology, is the capital of the Latin countries but a province of the Anglo-Saxon countries.

The French have a different view about where computing leads. There is remarkable agreement that computers challenge the conventional notions of work in an industrial society and the income distribution related to that work.

France produces volumes on the coming information society. From "L'Informatisation de la Societe" (produced at the request of then President Valery Giscard D'Estaing) through Jean-Jacques Servan-Schreiber's *The World Challenge*, the writers have in the main been active members of the French establishment. They are not, as elsewhere, simply independent believers that change is afoot.

Engineering Base

If the French are consciously going in a different direction from everyone else, they must have the required engineering base on which to build. Consider the country's achievements: the super-speed Train Grand Vitesse (TGV), the Super Phoenix (the world's first and only commercial breeder nuclear reactor) and the Concorde supersonic airliner. France is also the country of CIT Alcatel, one of the world's largest exporters of digital switching equipment. It is the country of Ada (the U.S. Department of Defense and North Atlantic Treaty Organization standard language) and of mass-market videotex.

guage) and of mass-market videotex.

So technological competence is not the issue — the French demonstrably possess that. Neither is the commercial competence of the French computing industry in question. IBM France continues to dominate the large systems market and has its main production center outside the U.S. for the larger 30 series CPUs at Montpelier in southern France. However, parts of CII Honeywell Bull, the flagship manufacturer of French mainframes, have not done badly on home or world markets.

The capability and the presence are also there in almost all other sectors of the technology and industry. What French businesses often do not have is a large enough market share. In mainframes, the French point out, 90% of the government market is held by foreign-owned manufacturers, primarily IBM.

If the problem that faces the French is not one of technological competence but rather of market share, are there any specific reasons why this problem should exist?

One of the key problems relates to tradition. The French strength has been to create very large systems that can be sold to administrations and large organizations. Renault and Moulinex apart, the French have been good at engineering when the market consists of tens of customers, weaker when the market is in the hundreds of units and very weak when it is in millions — except where the home market is protected by specific technological restrictions.

This weakness exists because until recently the elite went into organizations and administrations attuned to dealing with other organizations and administrations. Thus, TGV is exactly the sort of product the French can do

What Does It Take To Build The World's Largest Disaster Recovery Service In 2½ Years?



Comprehensive Corporate Resource

CDRS is fully-supported by our highly successful and financially stable parent company, COMDISCO, INC....the world's largest remarketer of IBM equipment. Among other things, that means priority replacement of damaged equipment for CDRS clients. Further supported by our sister subsidiaries, Comdisco Financial Services and Comdisco Transport, CDRS offers access to sound financial solutions and immediate response to your equipment delivery needs when emergency strikes.

Proven Performance

CDRS was the first vendor ever to have been put to the actual recovery test. In the past 2½ years, CDRS has managed every client disaster successfully, from batch to highly sophisticated teleprocessing support.

State-Of-The-Art Technology & Service

Continuous equipment upgrades of newer and more powerful equipment have taken place as customer needs have expanded. Today all four CDRS centers are fully-equipped with multiple IBM mainframes, including an IBM 3033-U16 and 3380 disk drives. Introduced in January, 1982, our highly specialized COMLINE 2 teleprocessing capability is second to none, offering flexible on-line back-up for unique client needs. For the exclusive needs of the financial world, CDRS introduced COMCHECK, the first practical check processing back-up solution in the industry.

Coast-To-Coast Capability

As scheduled for the first phase of growth, CDRS has located sites in major metropolitan areas throughout the U.S., including New York, Chicago, Dallas/Ft. Worth, and Northern California. In order to accommodate heavier local demands, CDRS has already doubled the size of the original Chicago area site, with plans to expand additional sites as need dictates. Unique network control systems from site to site allow comprehensive teleprocessing support across the country from any center.

Ongoing Commitment

From the continuous upgrading of our equipment, to the highly specialized services we offer, to the purchase of buildings in which our sites are located...the message to our customers is clear: CDRS is here to stay.

Our Customers

Involved in all segments of industry, from Insurance, Banking, and Public Utilities, to Airlines and Retailing, CDRS customers are the ones who have made us the leading disaster recovery service in the world. By placing your confidence in us from the start...you've made our success story a reality. Our appreciation for your confidence is sincere, and commitment to meeting your needs in the future is our first priority.

The Leading Disaster Recovery Resource...And Growing

COMDISCO®

Comdisco Disaster Recovery Services, Inc., 6400 Shafer Court, Rosemont, Illinois 60018 800/323-2144 In Illinois call 312/698-3000

CRT CABLES SAVE UP TO 50%

●Fast Service●Guaranteed Products●

Belden 9207 Twinaxial for
SYS/34-38, 5520, 5260, 5280

Belden 9269 Coax for
303X, 4331, 8100, 370, SYS/3

ALSO - Teflon Air Plenum Cable, Lightning Protectors, Switch Boxes, Wall Plates, RS232C Assemblies, all of Belden's Cable Products Available.

Cord Cable Company

1704 - 3rd Ave. S.E.
Rochester, MN 55901
1-800-533-1576 or 507-282-7252

FOUR LITTLE WORDS THAT STRIKE FEAR IN THE HEART IN THE 1980'S.



"The computer is down."

Every day another business goes "on line." Every day the world becomes more dependent on computers. And every day it becomes more important for the world to have a computer that won't go down, or even skip a heartbeat.

Over the past decade there have been computers designed to withstand hardware failures and eliminate downtime. However, all previous approaches depend heavily on software techniques to provide fault tolerance. A comparison of these old systems with the new Stratus/32 Continuous Processing™ System will illustrate how far we have come in one leap, by using advanced hardware technology instead of complex software.

How the Stratus Hardware Solution Supersedes the Software Solutions.

Stratus's hardware design means that fault tolerance is invisible to your application programs and users. You can even move previously developed applications to Stratus with NO CHANGES and NO PERFORMANCE LOSS for fault tolerance. In contrast, the software-based systems require complex, performance-stealing software in order to implement fault tolerance. This means that new programs are more difficult to develop, they run slower, and existing programs can't be run without major changes.

An added benefit of the Stratus fault tolerant design is that you can expand your system with additional processors as your computing needs grow. In fact, you can have up to 32 fault tolerant processors, 2000 communication lines, and 100 billion bytes of storage in a single Stratus system.

Hardware Self-checking Causes a Breakthrough in Service.

Each Stratus/32 tests itself EIGHT MILLION TIMES A SECOND while it executes your programs, so faults are detected BEFORE they corrupt your data. And when there is a failure, there's no need to rush to call your Stratus service technician. For one thing, the failed component, be it a CPU, controller, disk, or power supply, has a partner that continues operations as usual (without slowing down the system), so there's NO DOWNTIME. In addition, repairs can be made WITHOUT STOPPING THE SYSTEM. It is so easy to repair a Stratus/32 that our service is provided at about one-half the average price charged by other computer manufacturers.



$140,000, Software Included.

Our prices are competitive with "normal" systems (i.e. ones that do not provide fault tolerance), and substantially lower than the software-based fault tolerant systems. $140,000 buys you a complete four megabyte 32-bit system with 60 megabytes of disk storage, magnetic tape drive, and system SOFTWARE. If you like our hardware, you will be even more impressed with our software. (A common reaction among our users.) Briefly, our software offering includes VOS (a virtual operating system), transaction processing, networking, IBM communications, data management system, interactive forms builder, symbolic debugger, COBOL, Basic, PL/I, Fortran, Pascal, word processing...

To get more information call us at 617-653-1466.

The computer you can count on has arrived.

Stratus

CONTINUOUS PROCESSING™

Now that the world relies on computers it needs a computer it can rely on.

FRANCE LOOKS AHEAD

IN DEPTH

well and have been structured and able to exploit.

So why don't the French simply continue to concentrate on such products? Well, they do not intend to throw these advantages away, but seek to add to them. In his New Year message, President Francois Mitterand discussed the industrial themes of the current French five-year plan. Certain products stand out: the Airbus commercial airliner, TGV and satellites, all of which are within the French technological tradition. The fourth, however, is a personal computer, by which Mitterand meant more than a competitor to Apple Computer, Inc.'s Lisa, the IBM Personal Computer and Sinclair's Spectrum. He meant a product coupling computing to communications.

'Members of the French managerial elite, both in public and private sectors, have had similar education, usually including a good dose of math and some engineering. Any high flier will have spent time in both commerce/large-scale industry and the civil service.'

French View of Planning

Before looking at specific products, it is important to understand the French approach to planning in a free society, practiced since World War II. It is not planning as conceived elsewhere, either East or West. The French draw the major actors in the main sectors of industry into the planning process through consultation.

In addition, if a company wants access to loan funds at preferential rates, research and development aid, government support generally and access to the home market, then it would be foolish not to follow the lines laid down by the government.

Socialism in France is different from socialism in some other industrialized free societies. The socialist parties are the inheritors of the French Revolution, not its opposition. They are the party of the establishment at its most basic, not the challengers.

Four of the five largest electronics companies have now been nationalized, the fifth being still-independent IBM France. Nationalization has been much debated, fought by the political opposition as well as corporation owners and shareholders. But nationalization has not caused the upheavals that might seem likely if applied elsewhere — in the UK or U.S., for instance.

The French are accustomed to successful, profitable nationalized industries. Ownership in the major industries has not since World War II borne the importance attached to it elsewhere, either under free enterprise or communism. Ownership has not presumed control.

This attitude comes in part from French traditions. "Nothing is allowed until it has been expressly permitted," the saying goes. The



Your most productive asset has been dodging work.

Look at it this way.

If you had to dodge irksome screen glare while entering data. Hour after hour. Just how efficient would you be?

The fact is, CRT glare takes its toll. On your terminal users. And on department productivity.

But now there's a sensible solution.

Introducing Glare/Guard® anti-glare panels.

Glare/Guard instantly eliminates up to 94 percent of all CRT glare. Resolution is always sharp. And image brightness and clarity are dramatically enhanced—even under bright, fluorescent lighting.



Without anti-glare panel | Etched panel | Glare/Guard

The result? No screen washout.

Glare/Guard's secret is HEA® — a special High-Efficiency Antireflection coating we applied to the windows of NASA's Space Shuttle. And only Glare/Guard has it.

Glare/Guard's durable, laminated-glass design lasts indefinitely. It quickly retrofits to virtually every leading display terminal—no tools required. Its smooth surface is easily cleaned. And Glare/Guard sells for $99, regardless of display size.

Of course, there are less expensive anti-glare products available. But the nylon strands of mesh screens cause fuzzy images. While etched panels merely spread glare around and blur resolution.

Only Glare/Guard does exactly what an anti-glare panel is supposed to do. And that's getting your terminal users attention out of the glare, and back onto the screen.



Try one. And see for yourself.

Place a trial order from your dealer and install Glare/Guard on your busiest terminals.

Then sit back and watch.

You'll see the difference. On the CRT screen. And in your terminal user's performance.

For your free brochure, talk to your authorized Glare/Guard dealer. Or call 707/525-7448. Glare/Guard, OCLI, Dept. 109 D/C, 2789 Northpoint Pkwy., Santa Rosa, CA 95401. NCC Booth Numbers: P-7043 & P-7045.

Glare/Guard® and HEA® are registered trademarks of OCLI—Optical Coating Laboratory, Inc. © 1983 OCLI—Optical Coating Laboratory, Inc. All rights reserved.

Glare/Guard®

A difference you can see.

Personal Queries And Reports On IBM/38?

FUSION 4/38, the first full information retrieval and presentation system for the non-technical user.

FUSION
PRODUCTS INTERNATIONAL

(415) 381-1340
PO Box Fusion
Mill Valley, CA 94942
Telex 176099 FUSION



The Wang VS 100 Computer.

The head of our 32-bit family.

The Wang VS 100 32-bit computer. It's the most powerful member of the industry's most successful family of minicomputers. And for price/performance, nothing else comes close.

The VS 100 gives you 1 megabyte of main memory (expandable to 8 megabytes). Up to 10.2 billion bytes of disk storage. One megabyte of virtual address space per user for up to 128 users. And all the processing power of a full 32-bit central processor.

Our 32-bit VS 90 offers up to 5.1 billion bytes of disk storage, and 1 megabyte of virtual address space per user for up to 48 users.

Both the VS 100 and VS 90 offer a full range of program development tools. These tools allow your programmers to develop and debug applications in a fraction of the time that most other systems require. And because your people are already using industry standard programming languages, you'll see a dramatic increase in productivity almost at once.

They're easy to use, easy to learn, and make program conversions faster than any competitive systems. And by using today's DDP technology and SNA offerings, they can easily tie into and offload your mainframe.

If you want to increase system productivity, put the 32-bit Wang VS family to work in your department.

For a demonstration of the Wang VS 100 or VS 90, call

1-800-225-9264

Or send this coupon to:
Wang Laboratories, Inc.
Business Executive Center
One Industrial Ave., Lowell, MA 01851

Name

Title

Company

Address

City State Zip

( )
Telephone

WANG

The Office Automation Computer Company

A785

© 1983 Wang Laboratories, Inc.

IN DEPTH

The Velizy Videotex Experiment

The Velizy Teletel trial began in March 1981, though all terminals were not installed until the following autumn. For nine months beginning in October 1981, every call made on 2,200 of the terminals was logged.

Once the service (nearly 200 data bases plus messaging and some home banking and transaction services) lost its novelty status, some surprises appeared. In the early days of videotex, it was assumed that in the wider public market, users would go to the terminal with a specific question, find an answer if there was one and then switch off and go on to do something else. Average length of call would then depend on the skill of the user at finding his way around the data bases. This time spent was expected to compare to the average length of a telephone call.

Instead, length of calls at Velizy average a surprisingly long 15 minutes. The average call connects to between three and four separate data bases and services and accesses 47 frames.

Households were categorized according to socioeconomic criteria into seven groups. Average users made about two calls a week (6.2 to 8 calls a month), but executive users made between 14.8 and 16.2 calls a month. Interestingly enough, calling time remains roughly constant, no matter who the user.

Teletel traffic peaks at 1 p.m. (lunch time), 7 p.m. and 11 p.m. on weekdays. Peak day throughout France is Saturday, while the late-night peak disappears on weekends, and there is a low point around Sunday lunch time.

The great surprise has been the messaging service. This feature was put up late in the day, yet at the end of the trial was seen to be the second most popular service, just behind the news and general information data bases.

Users have demonstrated an interest in joining common interest groups. The Velizy service required that subscribers become registered users of what was called the M3V service, and six out of seven users did so. Users could form their own interest groups, and by the autumn of 1982, 340 had been formed, of which around 100 could be called serious. By that time, the system was handling an average of 1,500 messages a week, all local traffic.

planning and other intervention mechanisms have long meant that whoever is in ownership, French civil servants are in power.

To confuse matters even more, the civil servants in power are not necessarily at the time actually in the civil service. The French managerial elite, both in public and private sectors, consists of people (almost all men) who went to the same handful of competitive entry schools and have similar educational backgrounds, which usually include a good dose of math and some engineering. They run commerce/large-scale industry and the civil service almost interchangeably. Any high flier will have spent time in both.

It is understandable why French civil servants say that nationalization does not in principle much change their relationship to industry. Nationalization does, however, have some practical consequences: that relationship becomes simpler in some respects and more complex in others.

Life is simpler because the state now gets control over investment policy and can steer and reorganize more easily. However, there will still be competition. There will be no guarantees to state-owned companies that they will win the state-sector half of the electronics market irrespective of price or performance.

The gamble here is that the state sector, given enough time to stand on its own feet, will be competitive. It will be given the long-term resources to do so.

Growth Targets

Consider CII Honeywell Bull. The government first reduced the Honeywell share to less than 20%, then reorganized the company, concentrating linked activities into four subsidiaries.

The government has ploughed in funds on a long-term basis. The CII Honeywell Bull group will now invest 8,200 million francs (more than $1.1 billion at the current exchange rate of about 7.3 francs per U.S. dollar) over the years 1983-1986. Of this, FF 5,000 million will come as a state funding capital injection, FF 900 million of it for R&D and FF 1,000 million in repayable loan capital.

Much of the state funding will go in early. The group is committed to a 17% growth rate over the plan period. This data is not the sort companies normally make available. So why is it available now?

The planning tradition has long meant the French have been more open about the middle to long term than most societies. The indicative planning method does have a large element of sticks and carrots to it, and for either to be effective, there must be widespread public knowledge of the plans. The socialists have strengthened this tradition. All nationalized companies must announce their plans and growth targets as well as sign an agreement with the government, which is usually then made public.

Filiere Electronique

But the consultation process now goes further, leading to the reasons why life for the industry's political overseers and managers is getting more complex. First, there is the view that the computing industry as traditionally conceived no longer exists. The future is becoming more

UNIX & C™

HANDS-ON TRAINING

A Complete Training Curriculum for:
Management End Users Applications Staff Technical Support

COURSES	WASHINGTON, D.C.	BOSTON	SAN FRANCISCO	CHICAGO	NEW YORK/TORONTO	ORLANDO	TUITION	SEQUENCE TUITION†
UNIX Overview	Aug 9 Sep 27	Aug 9 Sep 27	Aug 23 Oct 11	Jul 5 Sep 6 Oct 18	Jul 5	May 31	$ 225	$ 860
UNIX Fundamentals for Non-Programmers*	Jun 1-3 Aug 10-12 Sep 28-30	Aug 10-12 Sept 28-30	Jun 1-3 Aug 24-26 Oct 12-14	Jul 6-8 Sep 7-9 Oct 19-21	Jul 6-8	Jun 1-3	$ 735	
UNIX Fundamentals for Programmers*	Jun 6-8 Aug 15-17 Oct 3-5	Aug 15-17 Oct 3-5	Jun 6-8 Aug 29-31 Oct 17-19	Jul 18-20 Sep 12-14 Oct 24-26	Jul 18-20	Jun 6-8	$ 735	$1125
Shell as a Command Language*	Jun 9-10 Aug 18-19 Oct 6-7	Aug 18-19 Oct 6-7	Jun 9-10 Sep 1-2 Oct 20-21	Jul 21-22 Sep 15-16 Oct 27-28	Jul 21-22	Jun 9-10	$ 490	
'C' Language Programming*	Jun 13-17 Aug 22-26 Oct 10-14	Aug 22-26 Oct 10-14	Jun 13-17 Sep 12-16 Oct 24-28	Jul 25-29 Sep 19-23 Oct 31- Nov 4	Jul 25-29	Jun 13-17	$1225	
Shell Programming*	Jun 20-21 Aug 29-30 Oct 24-25	Aug 29-30 Oct 17-18	Sep 19-20 Oct 31- Nov 1	Sep 26-27	Aug 1-2	Jun 20-21	$ 490	$1125
Using Advanced UNIX Commands*	Jun 22-24 Aug 31- Sep 2 Oct 26-28	Aug 31- Sep 2 Oct 19-21	Sep 21-23 Nov 2-4	Sep 28-30	Aug 3-5	Jun 22-24	$ 735	
UNIX Internals	Jun 27- Jul 1 Sept 12-16 Oct 31- Nov 4	Sep 12-16 Oct 24-28	Aug 15-19 Sep 26-30	Oct 3-7	Aug 8-12	Jun 27- Jul 1	$1375	

*Including hands-on training workshops ™UNIX is a trademark of Bell Laboratories †Savings for consecutive seminar dates

PLUS: UNIX INTERNALS IN LOS ANGELES—JUN 13-17.
CALL FOR DETAILS ON: • VIDEO-BASED COURSES
• IN-HOUSE SEMINARS

To reserve your seminar space now or for additional information, call:
(800) 621-3155 or in Illinois (312) 987-4000 8:30-5:00 central time.

Computer Technology Group UNIX seminars are presented by experts experienced in teaching UNIX as well as in designing and implementing UNIX-based systems.

COMPUTER TECHNOLOGY GROUP—our business is UNIX training.

COMPUTER TECHNOLOGY GROUP
Telemedia, Inc.
310 S. Michigan Ave., Chicago, IL 60604

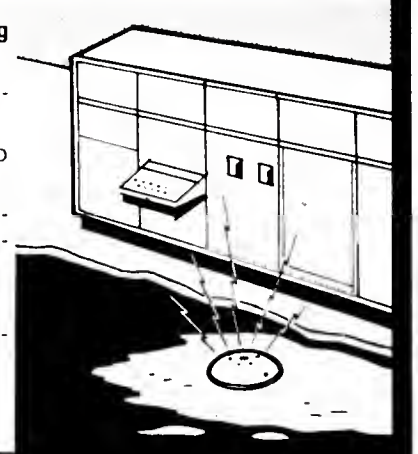
AVOID DOWNTIME!
WATER ALERT®
. . . FOR COMPUTER AREAS



Warns you of water leakage in sub-floor wiring areas.

- Produces a loud, intermittent alarm when activated by presence of water.
- Completely self-contained . . . no wiring, no connections.
- Early water detection (1/64" water film activates alarm) provides maximum time for corrective action.
- 24 hour per day monitoring.
- Options include remote indicator, remote flashing light, and automatic telephone dialer.

8 Models from $59 - $110
Call or write for complete information.



Dorlen Products
Division of Electro-Consultants, Inc.
7424 W. Layton Ave., Milwaukee, WI 53220
Phone 414-282-4840

The new COMPAQ Portable Computer. IBM compatibility to go.

Simple, isn't it? The COMPAQ™ Portable Computer can do what the IBM® Personal Computer does. To go.

It runs all the popular programs written for the IBM. It works with the same printers and other peripherals. It even accepts the same optional expansion electronics that give it additional capabilities and functionality.

There's really only one big difference. The COMPAQ Computer is designed to travel.

Carry the COMPAQ Computer from office to office. Carry it home on the weekend. Or take it on business trips.

If you're a consultant, take it to your client's office.

If you use a portable typewriter, you can use the COMPAQ Computer as a portable word processor instead.

If your company already uses the IBM Personal Computer, add the COMPAQ



Portable as a mobile unit that can use the same programs, the same data disks, and even the same user manuals.

There are more programs available for the COMPAQ Computer than for any other portable. More, in fact, than for most nonportables. You can buy them in hundreds of computer stores nationwide, and they run as is, right off the shelf.

With most other portables you'd probably need to buy an additional display screen because the built-in screen is too small for certain tasks, like word processing. The COMPAQ Computer's display screen is nine inches diagonally, big enough for any job, and it shows a full 80 characters across. And the built-in display offers high-resolution graphics and text characters on the same screen.

The bottom line is this. The COMPAQ Computer is the first uncompromising portable computer. It delivers all the advantages of portability without trading off any computing power capability.

And what do those advantages cost?

Nothing.

The COMPAQ Portable sells for hundreds less than a comparably equipped IBM or APPLE® III. Standard features include 128K bytes of internal memory and a 320K-byte disk drive, both of which are extra-cost options on the IBM. Memory and additional disk drive upgrades are available options to double those capacities.

In the standard configuration, the COMPAQ Computer has three open slots for functional expansion electronics as your needs and applications grow. It accepts standard network and communications interfaces including ETHERNET™ and OMNINET™.

If you're considering a personal computer, there's a new question you need to ask yourself. Why buy a computer that *isn't* portable?

For more information on the COMPAQ Portable Computer and the location of the Authorized Dealer nearest you, write us. COMPAQ Computer Corporation, 20333 FM149, Houston, Texas 77070. Or call 1-800-231-9966.

© 1983 COMPAQ Computer Corporation
IBM® is a registered trademark of International Business Machines Corporation.
ETHERNET™ is a trademark of Xerox Corporation.
OMNINET™ is a trademark of Corvus Systems.
Apple® is a registered trademark of Apple Computer, Inc.
COMPAQ™ is a trademark of COMPAQ Computer Corporation.



COMPAQ™

PORTABLE COMPUTER

The most computer you can carry

"GTE Telenet provides 24-hour, 7-day-a-week worldwide TELEMAIL™ service thanks to the unique capabilities of the Tandem NonStop™ Computer System."



C. Thomas Taylor, Vice President,
Network Applications & Terminals
GTE Telenet Communications Corporation

"As the world's most advanced computer-based message system, GTE's TELEMAIL™ service assures our customers one thing: that their information will get to the right place, and on time. Without excuses. The certainty behind that guarantee is our Tandem NonStop computer system.

"Currently, more than 100 of the nation's largest corporations, government agencies, and other associations are using TELEMAIL to send and receive information within their organizations, anywhere in the world. But our TELEMAIL system is more than just a super-efficient message center. It also lets users enter orders from the field, manage sales and distribution channels, even facilitate financial reporting and electronic publishing.

"Clearly, with people entrusting critical applications like these to the system, we needed a computer that could not only provide 100% availability, but could ensure that data would not get lost or destroyed in case of a failure or outage.

"Almost as important in our selection of the Tandem computer was the ease with which we can expand the system. Tandem's modular design allowed us to start with a system that met our early needs, and then grow with us, consistent with our expanding business requirements. We didn't have to rewrite any of our software—just add processors and disc storage as we went along.

"Whether it's providing the TELEMAIL service or supplying an entire TELEMAIL system, we look forward to satisfying more and more of our customers' communications needs. And the contribution of the Tandem NonStop system is essential."

The NonStop System. The only system on the market today that can provide a distributed network of up to 255 systems, each ranging from 2 to 16 processors, supporting





thousands of terminals in an on-line, transaction-based environment.

Tandem. Fully supported by a worldwide sales, training, service and manufacturing organization.

For information on how a Tandem NonStop computing system can improve your company's competitive posture and P/L statement, call your local sales office or Tandem Computers Incorporated, 19333 Vallco Parkway, Cupertino, California 95014, U.S.A. Toll Free 800-538-3114 or (408) 725-6000 in California.

TANDEM

NonStop Computing Systems

© 1983 Tandem Computers Incorporated

FRANCE LOOKS AHEAD

IN DEPTH

digital right across the electronics industry, and so it is all being viewed as one industry referred to as the Filiere Electronique. "Filiere" resists precise definition. Think of it as the totality of French electronics interests plus those interests in other "ologies" (such as psychology) where advances must be made if a new product is to be marketed successfully.

Statistics as yet only account for the traditional electronics industry. In a widely publicized speech late last year, the key government figure with responsibility for the Filiere, Jean Claude Hirel, director of Direction Industrielle Electronique et L'Informatique (Dieli) described the industry thus:

- The 1981 production of the Filiere was FF 96 billion, counting for 3% of French industrial production.
- It employed 318,000 people directly and more than 200,000 indirectly.
- The trade balance was in deficit by FF 6 billion and would reach FF 18 billion in 1986, measured in 1982 francs.
- Employment was decreasing and would continue to do so.

The first aim of policy was to reverse these trends and turn a growth rate running now at 3% into one of 9%, at the same time seeking to increase employment by 80,000 and expanding the Filiere's share of the country's industrial production base by 1%.

Putting together investment plans in the Filiere over the five coming years, investment would be FF 140 billion, of which FF 40 billion would be in new funds from the state.

State as Decision Maker

What is different in this French approach is the curtailment of managerial independence implied in the execution of government policy. The state is master of the decision-making process. Also, the practice emphasizes prior consultation, particularly with would-be users. The methodology relies on pilot projects, national development programs and market trials of partially developed products.

The Postes, Telegraphes et Telephones (the publicly owned telephone and telecommunications company), which is developing videotex, is carrying out some 40 separate public trials (see box on In Depth/6). The PTT's experiments range from the most general, public call box videotex, to the most specific, such as doctors on-line to a consultative diagnosis system.

The goal in all major electronic products is to be technologically independent of the U.S. and certainly of Japan.

What the French seek is the number three slot and with it the leadership of Europe. They have, in fact, already reached this rank in terms of volume and value of production, but their industry is not as well balanced as they wish. Weaknesses show in semiconductors, some consumer products and large computers.

Much of the French attention focuses on rectifying these weaknesses. The methods are traditional: investing, training, striking joint deals (particularly in semiconductors and mostly with U.S. companies) and trying to increase the number of orders.

And they are mounting studies. A recent study attempted to help decide whether France should try to develop very large computers to compete with Cray Research, Inc., Control Data Corp. and the Japanese. (The answer, it is said unofficially in Paris, is yes, and funds will be applied to that end.)

What the French are really about is the future: new products and systems. Here their ideas are most interesting. French literature about the

NO PURCHASE

COM
PRODUCTS
Bell & Howell Computer Output Microfilm Division invites you to visit booth D1650 at the National Computer Conference.
BELL&HOWELL
COM DIVISION

FRANCE LOOKS AHEAD

microelectronics revolution expressed the belief that the technology can be developed to create a society in which people are given hope, choice and significant roles to play. Lives need not be dominated by hard routine.

This motivating belief may sound fuzzy, almost metaphysical, yet it should not be dismissed. The statement of principle is built into the French approach. That is the way they think and, given the chance, that is where they will start.

So how does a country of 55 million use technology to create a new society? The people themselves decided in favor of the two main socialist planks, consultation and decentralization.

Regarding consultation, they are trying to develop mechanisms at many levels. First there is the centralist government itself, which, as any other, has grown up with separated ministries, each with a specific area of responsibility, such as health or education.

There is a political belief that all facets of government should march in step. This belief is not new — all governments, not just those claiming to be reformist, would agree with that. However, if you take the view that a technology cuts across the mechanisms of government and society, then you had better organize yourself accordingly.

So the Filiere Electronique is not being allowed to walk in isolation. There is an interministerial steering group and the civil service machinery below it, a group that aims to ensure that if resources are used to develop a product, there will be a commitment to trials and usage early on.

Levels of Consultation

Also at the central government level, the French try to discover not only what people want but also what is affordable over what time period. Thus, the government has involved itself in many things, among them a recent major international conference on technology and society in Paris attended by everybody from the French president to artists and entertainers to Alvin Toffler.

This conference was only the tiny, visible part of the consultation going on. Consider now two other major actors, the Agence Development de l'Informatique (ADI) and the Direction Generale Telecommunications (DGT), the PTT's master.

The ADI, or computing development agency, is a government organization with a FF 360 million budget meant to spearhead the effort in computer-related research by working with R&D laboratories, the industry and users.

Spearhead is the operative word, for the ADI is not meant to be a 100% funding agency but rather an initiator and catalyst. The ADI is seeking to involve the many state-sector laboratories (which include 2,400 professionals in computing and electronics) with industry and industrial laboratories, both public and private, which employ between 5,000 and 6,000 more (IBM France employs about a quarter of these). In turn, the government hopes to involve both with prospective users earlier on.

The ADI seldom gives as much as 25% of the funding over the total life of a project. The rest must come from R&D budgets of the companies taking part, from user ministries on behalf of their clients and from the user clients themselves.

Much time is therefore spent trying to define priorities, and the ADI finds itself working closely with almost all other ministries. But the ADI also works at a broader, grass-roots level. It is involved in more than 100

NECESSARY.

There's one thing Codex won't ever sell you. And yet it's worth as much as anything Codex sells.

It's the services of a Codex Applications Engineer.

The people involved in the Codex Applications Engineering program are experts in the field of data communications. They work with the broadest range of networking products. Many of them have advanced degrees, and all of them have years of practical experience in the science of planning and building a data communications network.

They're located in just about every Codex sales office around the world. To help you and work with you in coming up with practical, workable plans for your own data communications network.

No matter what other equipment you'd like to integrate. Or how simple or how complex the networking problem.

There's no bigger, more able support service in the industry. And no group more in tune with your needs, or with the idea that every data communications problem requires a unique solution.

True, you could plan a data communications network without the help of a Codex Applications Engineer.

But with all that they can bring to a job, why on earth would you want to?

For more information about what a Codex Applications Engineer can do for you, call **1-800-821-7700** Ext. 885. Or write: Codex Corporation, Department 707-85, 20 Cabot Boulevard, Mansfield, MA 02048.

codex

MOTOROLA INC.
Information Systems Group

SEE US AT NCC, MAY 16-19, BOOTH #S-5050.

© 1983 Codex Corporation

ORDER THE WORLD FAMOUS WOLFE TESTS ON TRIAL!
Validated... indepth
Aptitude & Knowledge series

- PROGRAMMERS
- TRAINEES
- ANALYSTS
- OPERATORS

SATISFACTION GUARANTEED
Call Toll Free or write:

Wolfe Computer Aptitude Testing & Training
Box 319, Oradell, NJ 07649
1-800-431-1953 (USA)
1-800-942-1935 (N.Y. State only)

IN DEPTH

different sectoral plans covering much of French life.

The annual report lists ADI involvement in nearly 70 projects, which will mean installing nearly 90,000 computing devices in the next year or so.

And the ADI, too, is tied into many of France's chambers of commerce, which play a much more official role than elsewhere, for they are involved in the industrial training programs in their own areas, which are supported by government.

So the ADI finds itself involved in policy making at both the broad national and narrow local levels. At the broad level it is helping to fund and organize a number of national R&D projects in such areas as computer-aided design/very large-scale integration, software engineering, computer-aided instruction, automatic translations and visualization.

Automatic translation here as in Japan has a high priority. ADI head Charlie Garruiges says the problem is not electronic. The advances required are mostly in the soft sciences, including linguistics and psychology. Work is being funded in these areas. Garruiges notes a need to develop new screen technologies.

Garruiges is a rising star. A recent report to the president proposes that what is needed is not just a national policy to link researchers, industry and users, but also a major guiding agency, one that could provide an umbrella for the 30 or so government organizations and quasi-government organizations involved in computing policy and R&D. Currently the ADI appears to be that eventual umbrella organization and Garruiges the man to run it.

Garruiges is not afraid of speaking his mind in public, even if many find his remarks not particularly palatable. "The use of big computers is now a waste of time most of the time," he says. "People do not understand what they can do with computers — not only how, but for what."

He goes on, "We have also to produce products not in the same way as in the past. But our problem is that with much of the possible new products, we do not know how to evaluate." He makes it clear that he considers the problem general and not confined to France.

Communications Concentration

DGT and the French concentrate on on-line digital products: telephones, videotex terminals, TV receivers, video recorders, copiers that can act as output printers, facsimile transceivers and microcomputers with communications interfaces. Jean Pierre Chevenement, the minister of research and industry, has often said that the future lies with telecommunications and new mass-market services using digital products.

How can France build up that part of the Filiere? First, the problem that faces European electronics is that a continentwide market on the U.S. model does not as yet exist, and there are few European multinationals in the electronics fields.

The French would like to create French-owned multinationals. For months the nationalized Thomson electronics group tried to buy control of West Germany's Grundig in order to get more than 50% of the West German TV receiver market. Thomson was eventually rebuffed and settled for control of the much smaller (4,000 employees) consumer electronics company Telefunken. The alternative multinational route is to buy small companies in growing markets, such as the U.S., a trend particularly noticeable in software.

Aiming for Volume

France's second effort is to build up the industry that exists, both old and new. The goal is volume, to be

THIS IS WHERE THE INDUSTRY IS GOING!



INFOMART should be the future address of anyone involved in the marketing of information processing products and services because **INFOMART** addresses itself to virtually every one of your marketing problems.

INFOMART brings the buyer and seller together in a central location specifically designed to help compress the buying cycle.

INFOMART educates and informs buyers of all levels through comprehensive, ongoing seminars and symposia designed to help them evaluate and purchase.

INFOMART is located in the most dynamic business center in the nation — DALLAS! A city whose accessibility, climate, airport and financial base make it the ideal trade environment.

INFOMART is an extension of a 30-year tradition. The Dallas Market Center, the largest, most successful merchandising complex of its kind, attracts over 500,000 buyers each year.

INFOMART is a cost efficient answer to the industry's most pressing problems — how to educate, exhibit, demonstrate and market your products at a reasonable, controlled cost.

For more information about **INFOMART**, contact Bill Winsor, Vice President/General Manager, 2100 Stemmons Freeway, Dallas, Texas 75207, (214) 655-6235. You'll not only learn who in the industry will be addressing at **INFOMART**, you'll also learn why.

THE INDUSTRY'S MARKET SUPPORT CENTER

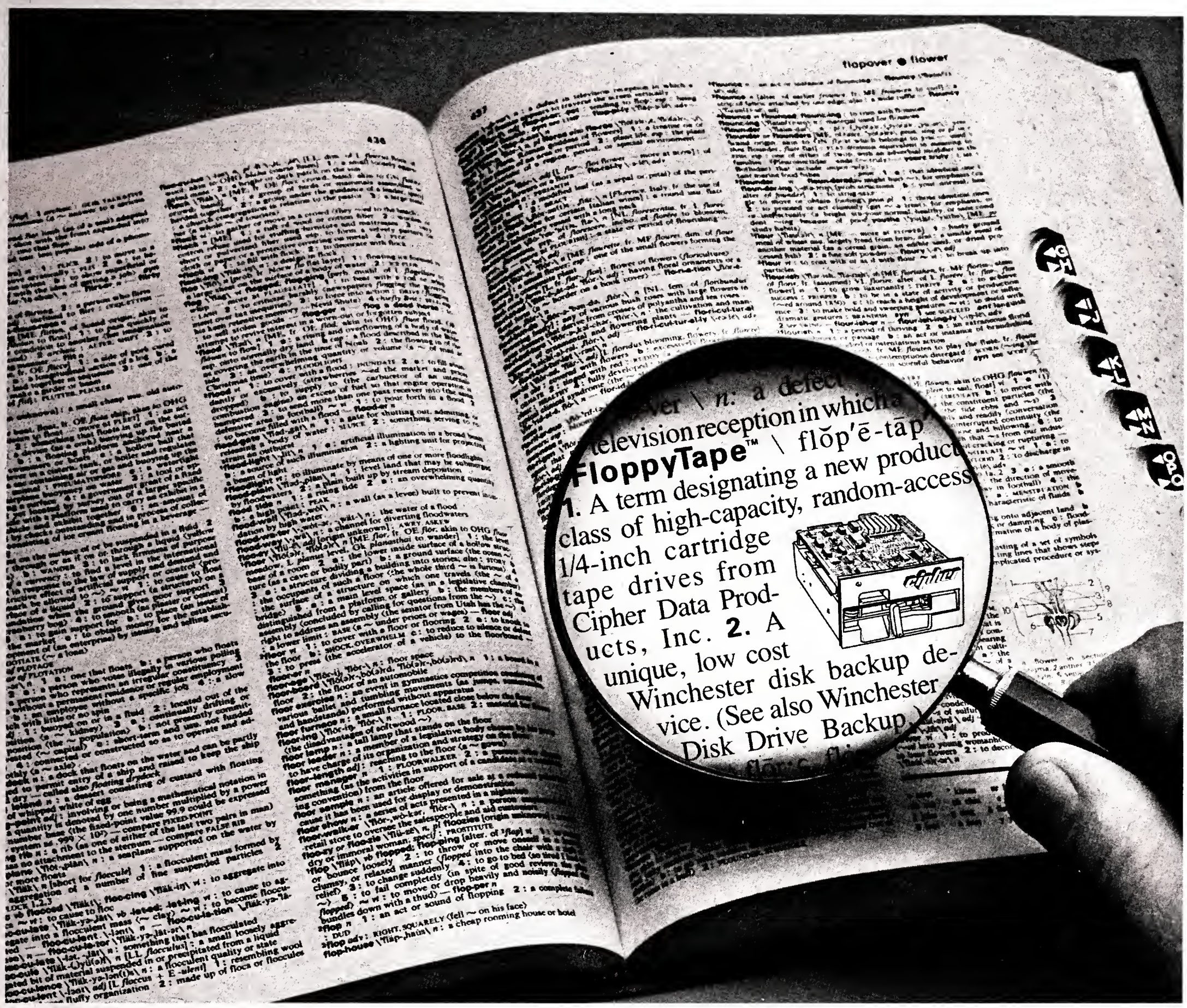
INFOMART

REPORT WRITER
for DEC computers
under RSTS and VMS

- Very powerful and user-friendly
- Better than DEC's Datatrieve
- Costs much less

etc ENTERPRISE TECHNOLOGY CORPORATION

305 Madison Avenue, NY, NY 10165 (212) 972-1860



The latest word in computer peripherals...

...and the last word in disk backup.

The 525-CT FloppyTape is a new class of product that provides the last word in Winchester disk drive backup with its many unique design features. Using the standard 1/4-inch tape cartridge, this innovative device combines low cost, high capacity, and disk-type data accessibility to provide disk backup features with new meanings:

Low Price 1. Sells for appreciably less than any other device with comparable features. **2.** Priced at **$300** per unit in large OEM quantities.

High Capacity Storage 1. Stores 32 unformatted megabytes of data on a standard 1/4-inch tape cartridge. **2.** Allows one tape cartridge to replace up to 40 double-sided, double-density floppy disks.

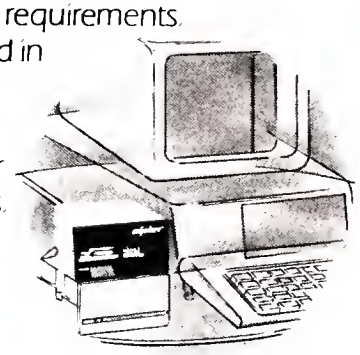
Floppy Disk Emulation 1. Configures a standard 1/4-inch tape cartridge with important floppy disk features such as random access to sectors and soft sector formatting. **2.** Allows in-place updating of information stored on the tape.

Immediate Integration 1. Attaches to standard floppy disk controllers. **2.** Provides plug compatibility with standard SA450 or SA850 interface connectors.

Space Saving Design 1. Packaged in the same compact form factor as the 5-1/4-inch floppy or Winchester disk drive. **2.** Designed with easy front panel loading and positive cartridge lock. **3.** Permits flat or side mounting.

So, let FloppyTape redefine your disk backup requirements. Next time you're in the market for the latest word in backup, just look it up...then hook it up.

For a Further Definition—Contact Cipher for a free 525-CT FloppyTape brochure, or for further information on other Cipher products.



cipher® data products, inc.

10225 Willow Creek Road, P.O. Box 85170, San Diego, California 92138
Telephone: (619) 578-9100, TWX: 910-335-1251

CIPHER DATA PRODUCTS (UK) LTD.
Camberley, Surrey, England
Telephone: 0276-682912
Telex: 858329

CIPHER DATA PRODUCTS S.A.R.L.
Paris, France
Telephone: (1) 668 87 87
Telex: 203935

CIPHER DATA PRODUCTS GmbH
Munich, West Germany
Telephone: (089) 807001/02
Telex: 521-4094



The next issue of Computerworld OA takes a hard look at OA software.

The OA Focus section of the next *Computerworld OA* will provide comprehensive coverage of data bases, software conversions, decision support systems, information centers, the user interface and much more. We'll showcase vendor directions, what benefits are available now and what users should plan for in the future. We'll summarize the latest information from developers and highlight emerging trends in order to bring both long-term and specific guidelines to those responsible for planning and purchasing software for their organizations.

In addition to the OA Focus on Software, *Computerworld OA* will feature a survey of real users of information centers, present a case history of a large bank user and will have articles on subjects such as cost justification, ergonomics and remote work sites.

Computerworld OA keeps you up-to-date on what's happening in *all* aspects of office automation with articles on new technologies and trends, and overall OA strategies. And, in every *Computerworld OA,* we take a closer look at a key issue in our special OA Focus section.

If OA planning and decision-making is important to you, you'll want to read the next issue of *Computerworld OA*. The issue date is June 15. The deadline date for advertisers is May 6. (Materials are due one week later).

For advertising information on *Computerworld OA* and the people who read it, call Don Byrnes, National Accounts Manager at (312) 827-4433, or contact your local *Computerworld* sales representative.

Computerworld OA:
We're writing the book on office automation.

COMPUTERWORLD
OA
OFFICE AUTOMATION

SALES OFFICES

BOSTON/Chris Lee, Ed Marecki, Joe Fitzhugh, Jim McClure, Kathy Doyle, Diane Sukey, (617) 879-0700
CHICAGO/Art Kossack, Newt Barrett, Chris Lee, Jean Broderick, (312) 827-4433
NEW YORK/Mike Masters, Doug Cheney, Ray Corbin, Joan Daly, Fred LoSapio, Gale M. Paterno, (201) 967-1350
ATLANTA/Jeffrey Melnick, Mike Masters, (404) 394-0758
SAN FRANCISCO/Bill Healey, Barry Milione, Theodora Franson, A.G. Germano, Eileen Dunn, Ruth Gordon, (415) 421-7330
LOS ANGELES/Jim Richardson, Bob Hubbard, Beverly Raus, (714) 556-6480

FRANCE LOOKS AHEAD

IN DEPTH

built in part by exporting, restructuring and also merging interests.

But what is the point of volume without a substantial home-market share? And how is that achieved? In the area of telecommunications, France has an instrument in place with great purchasing power — the PTT.

France is the country where it was once said that half of the population was waiting for a phone while the other half waited for a dial tone. Those days are gone, for the French have been modernizing rapidly. Phone installations have increased more than fivefold in less than 15 years and are expected to double again in a decade.

The DGT controls a surprisingly modern nationwide organization in the PTT, which is run by much younger people than is the norm elsewhere — people with few commitments to the past. The PTT operates a vast, modern marketing and service organization.

Growth of Videotex

So what is the PTT to market that will feed back into French as opposed to foreign industry? Enter now the online world of Telematique and those twin videotex technology products, the electronic telephone directory and Teletel, the French version of videotex in a general information retrieval/transaction-processing role.

Both are based on an alphanumeric keyboard and black-and-white CRT terminal, which come with the phone rental.

The electronic telephone directory has now been launched out of the trial stage. It is being extended in Brittany, then follows the Paris region and other main urban areas including Marseilles.

So far, the PTT has placed orders for 600,000 production-version terminals, the smallest posttrial order being for a 100,000 run.

No such decision has yet been made for the launch of national Teletel services, though all signs are in its favor. The reason has much to do with the new French passion for widespread consultation. Surveys take time.

And the French do not simply consult those who might use the service, but also those who might be otherwise affected. They set up an oversight council that

The CONCEPT AVT

Because VT100 users deserve more than just VT100 compatibility.



THE CONCEPT DISPLAY TERMINAL

VT100 compatibility is one thing, but eight pages of memory, programmable function keys, windowing, multiple computer capabilities, ANSI standard conformance...and VT100 compatibility is something else. Only from Human Designed Systems.

A good news/great news story from Human Designed Systems.

First the good news. The *concept* AVT display terminal gives you everything you need in an 80/132-column ANSI/VT100-compatible display terminal. And at a very competitive price.

Now the great news. The *concept* AVT display terminal provides an exciting, new set of capabilities that lets you do much more. Without changing the price.

$1295*

It starts with ANSI standard conformance, DEC software compatibility, and 80/132-column capability, and extends that even further by offering eight pages of display memory to relieve the interactive user of the need to generate unnecessary hardcopy printouts and to provide the application developer with a powerful tool for applications requiring multiple formats and storage of large volumes of text; by enabling users to permanently configure a terminal for their needs or applications; by providing functionality designed to improve the effectiveness of slow-speed applications; by enabling users to create true windows within display memory; by providing programmable function keys which transmit data and/or execute terminal commands; by providing up to three additional communications ports for connection to other peripherals and computers; by providing flexible user networking functionality for use in a wide range of different applications, including multiple computer connections; and by doing much more.

VT100 compatibility and ANSI standard conformance. Add it to the *concept* display terminal's 132-column performance, in ASCII or APL/ASCII models, with multiple computer capabilities, windowing, programmable function keys, multiple pages of memory, and much more, and you can see why Human Designed Systems has given terminals a new meaning...and that means true economy.

*Quantity one. DEC and VT are trademarks of Digital Equipment Corporation.

human designed systems, inc.
3440 Market Street, Philadelphia, PA 19104
215-382-5000

Human Designed Systems. We're redefining terminal performance.

Atlanta (404) 391 9763 Boston (617) 329 3510 Chicago (312) 825 2960 Dallas (214) 437 1888 Delaware - Infocon (302) 239-2942 Hawaii - Gray Associates (808) 261 3791 Los Angeles (213) 410 9454 Northern New Jersey Infocon (201) 624 1372 New York City Area - Infocon (212) 689-8833, New York State - Naco Electronics Rochester (716) 223 4490, Syracuse (315) 699 2651, San Francisco (415) 692 4184, Washington, DC - International Systems Marketing (301) 279 5775; Australia I O Peripheries Pty Limited (02) 427 3555 Belgium - BELCOMP 091/25 22 88 Canada - CAIL Systems Toronto (416) 362-1063, Denmark ADCOM Data Aps 1 194466 Finland Modulsystem OY 0 6926511 France - Walton (1) 226 06 90, Singapore DTS Singapore (65) 33 88 566 Sweden - Allnovo Data AB 08 37 25 15; Switzerland Mitek ag 02 461 22 52 United Kingdom Shandell Systems Ltd 02407 2027 West Germany - COMKO Computersystemges. mbH 0221-48 30 51
DISTRIBUTORSHIP INQUIRIES INVITED

I want more than VT100 compatibility

☐ ...and I want it fast; please call.
☐ Send more information on the *concept* AVT.

Name _____
Title _____
Company _____
Address _____
City _____ State ____ Zip ____
Telephone _____

human designed systems, inc.
3440 Market Street, Philadelphia, PA 19104
215-382-5000

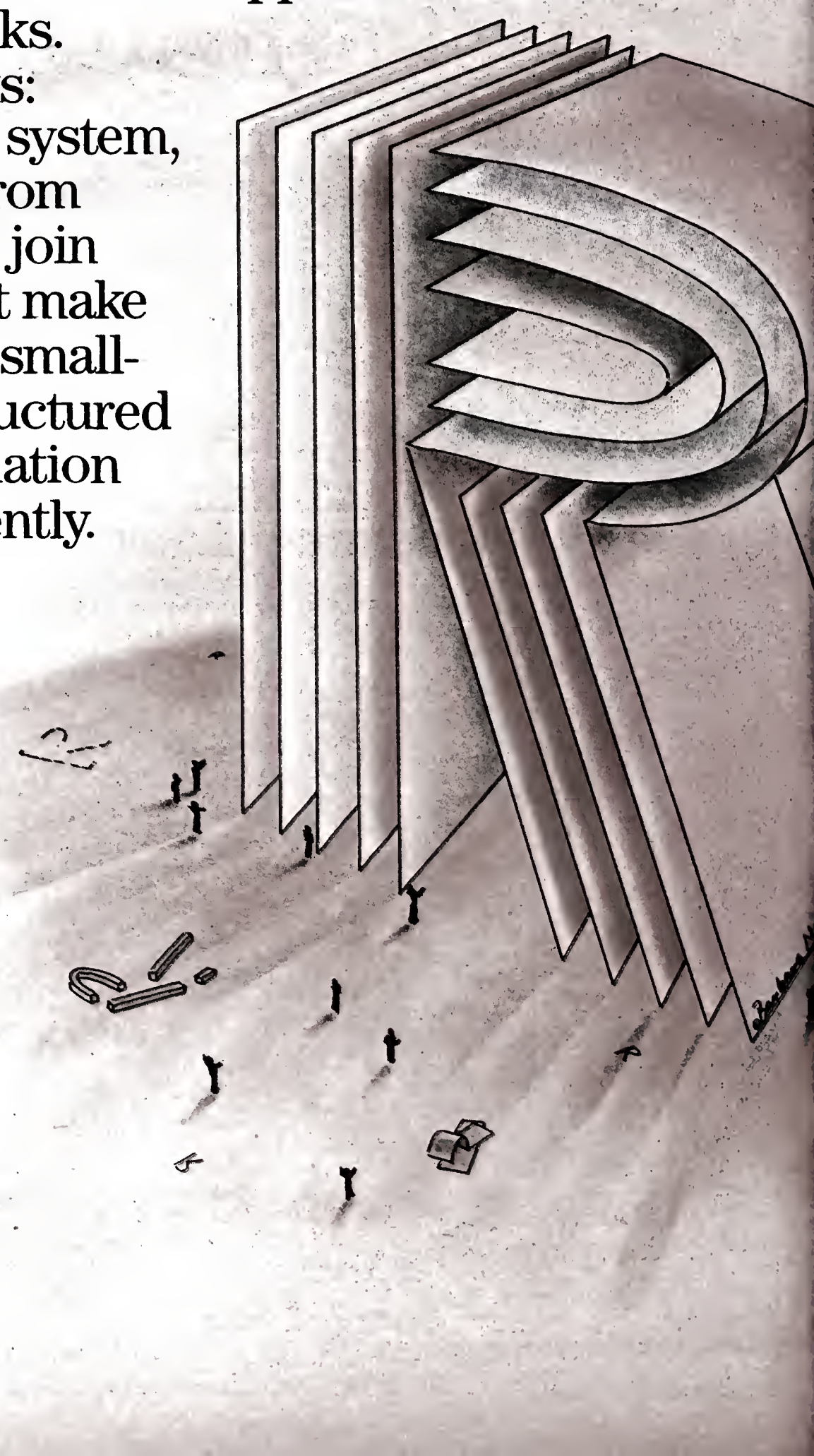
The one and only R.

Cullinet's relational database management system for IBM computers. It's called IDMS/R.

IDMS/R is a single solution to the two-sided problem of providing useful database applications for both end user and production tasks.

This is how it works:

As a true relational system, it allows you to select data from separate and unrelated files; join it, then project it in ways that make it possible for you to handle small-scale applications and unstructured end user requests for information quickly, directly and intelligently.



What's unique is that IDMS/R also allows you to handle high-volume, production applications with the proven network technology best suited for the job.

It's this marriage of architectures that makes Cullinet's relational DBMS stand apart. In fact, where others have tried to propose relational or pseudo-relational components that exist separately from the production database, Cullinet's is the only one that lets both work together. Thus serving the whole corporation by serving all of the needs within it.

IDMS/R.

To get everything out of the database that you've put into it, the answer is software.

And software is Cullinet.

Cullinet

© 1983 Cullinet Software, 400 Blue Hill Drive, Westwood, MA 02090.

IN DEPTH

represents politicians, the administration and consumer and commercial interests, including local newspaper publishers who could be adversely affected. This prereview process naturally slows down decision making.

That the French eventually will press on with a national videotex service is a foregone conclusion, for much hangs on the development of this service, including electronic banking.

Now enter the smart card, that credit card-size piece of plastic containing an 8-bit microprocessor and initially some 4K bytes of memory. The card had a small role to play, involving 300 users, in the Velizy videotex trial (see box on In Depth/6) and is now to have a much wider bank-sponsored experiment in three large cities. Initially, 125,000 cards usable in more than 600 shops will be issued. And France is in a hurry: The banks have said they will decide on the future of smart card-based point-of-sale services by the end of the year.

The banks have economic motivation for going ahead. What they seek in large part is to replace the check. Currently some three billion checks are issued annually in France, 80% of them for sums of less than FF 100, yet each costs an average of FF 5 to process. The expected transaction cost for a similar volume of smart card-based payments is less than FF 1.

The smart card and videotex hang together. Few people would be willing to switch to a smart-card system unless they could keep their own private record, which in this case requires a card reader — a terminal.

Once the terminal finds its way into the French household, other services will be tempting to add. Indeed, the terminal's cost can only probably be justified if you hang a complex of services on it.

But the world in which electronic directories, videotex and the smart card transform France is also the world of other products and services. A different environment is created in which the

Datapoint has installed more than 5,000 local area networks.

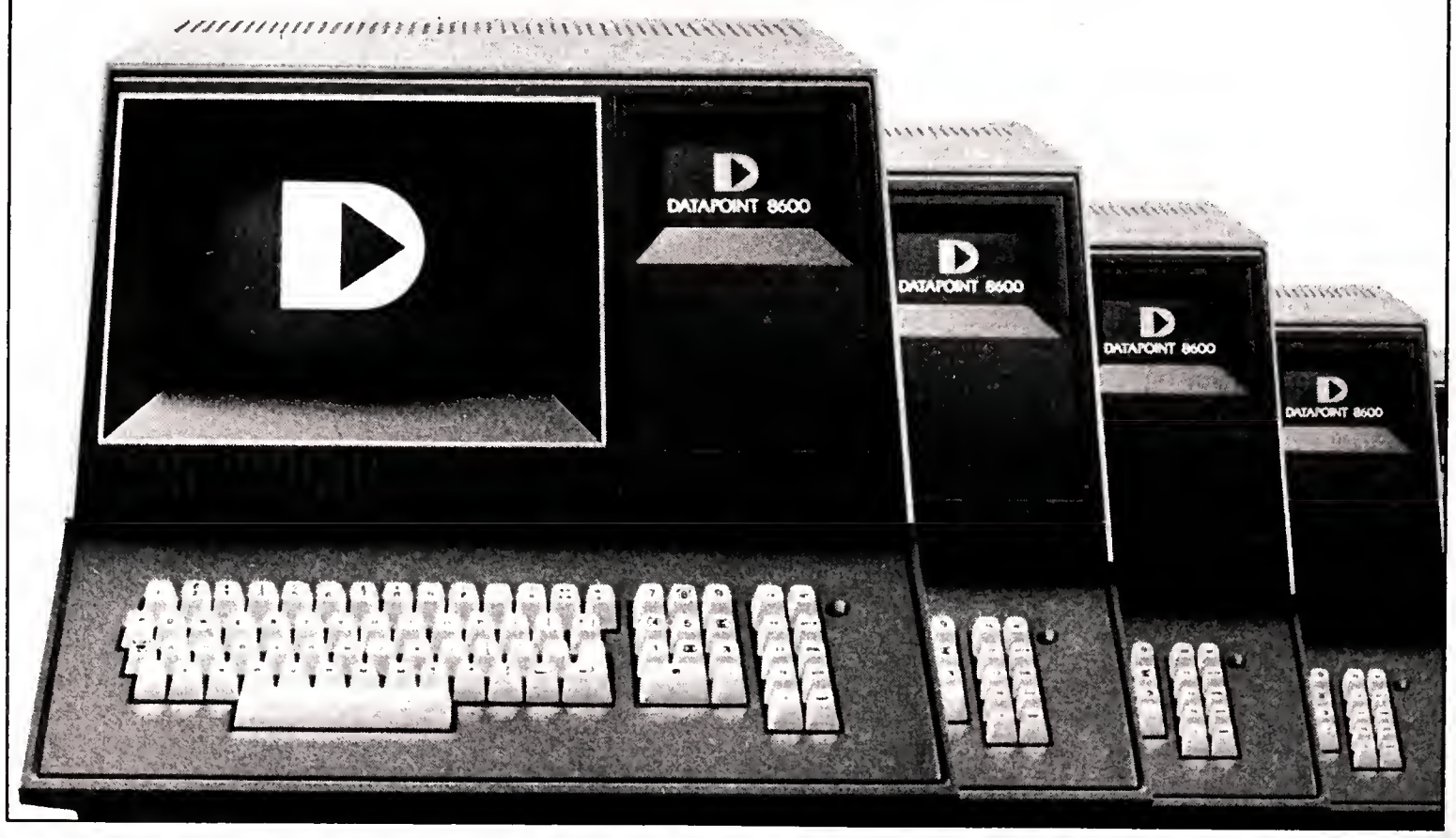
That's more than anyone else!

When you look for a local area network to enhance your information system, remember there's safety in numbers. Datapoint is the leader in local area networks, with more installed than any other vendor.

So while others struggle to perfect their local area networks, Datapoint is installing them. And has been for *six* years. That means more experience and performance.

So if you're considering a local area network, look at the numbers. Look at the network. Look at the leader. Datapoint.

For more about Datapoint, call (800) 531-5639. In Texas, call (800) 292-5099. Or write Datapoint Corporation, Marketing Communications T41 CW, 9725 Datapoint Drive, San Antonio, Texas 78284



DATAPOINT

"FREE" SYSTEM/34 ACCOUNTING SYSTEM

A complete interactive income/expense entry and accounting system when you purchase "SYSTEM/34 INTERACTIVE PROGRAMMING TRAINING GUIDE"

A straight forward workshop approach for becoming a more productive interactive programmer taking full advantage of the System/34 facilities.

- MRT programming made easy
- Simplified planning & Design
- Avoiding common problems
- DFU versus Interactive
- Coding shortcuts

$145.

AMR Advanced Management Research Inc.

125 Wolf Road
Albany, New York 12205
Phone: (518) 458-1239

microcomputer and the picturephone play a part.

The Centre Mondial (World Center for Computer Science and Human Development), based in Paris under the presidency of the French writer and politician, Jean-Jacques Servan-Schreiber, has become an instrument of French policy, moved administratively under the DGT. The French have announced they will pull out of the United Nations-affiliated International Bureau for Informatics, the Third World and computing development organization that relies on France for 30% of its $8 million budget.

The French say that with a tightened budget, they prefer to put what money they have behind the Centre Mondial.

Marseilles Trial

The Centre Mondial can be viewed working in the Marseilles trial, currently awaiting the arrival this summer of French-built microcomputers.

The trial is based on the proposition that if the future is bound up with computing, then it is necessary to find out what people want computers to do for them and exactly what computers can do. Above all, the trial will study how people interact with systems.

The chosen area is a Marseilles *quartier* called Belle de Mai, urban and densely populated. It is an area representative of France's older cities and thus a good test site. In this white- and blue-collar working class area, most people work close by. Nearly half the workers walk to work at the docks, railways, the PTT and many small businesses.

For this population of 17,000, 1,000 microcomputers will be installed by the end of 1984. Some schools already have access to computers as do many businesses.

Initially the systems are being handed over to those who want them on long-term loan. What the average Frenchman will do with the terminals no one is sure because the trial is also the first large-scale trial of the Logo programming language with an adult population. Logo was designed for novice users and is noted for its ease of use and graphics capabilities.

Fiber Optics System

Down in Biarritz, the French are creating the world's first large-scale local communications system based on fiber optics distribution.

The PTT will seek the first 1,500 users out of a planned trial base of 6,000 from existing telephone subscribers.

The service will provide the user with a picturephone complete with ambient-light video camera, which can be used to show either a face or documents. Twenty-seven channels are available: 15 video, 12 audio.

This picturephone terminal is expected eventually to access videotex services. Here is the beginning of an all-purpose picture and text interactive terminal, one that can add memory and output devices over time.

'The French believe it is the duty of the state-owned commercial structure to take the lead in providing the infrastructure of society. Opinion leaders of both left and right, however, are quite well aware of the dangers of letting the state have too much power.'

Such projects reflect the French belief that it is the duty of the state-owned commercial structure to take the lead in providing the infrastructure of society. Opinion leaders of both left and right, however, are quite well aware of the dangers of letting the state have too much power.

Consequently, there is a strong belief that the state should do what it can to provide that infrastructure, make its contribution to services where only the state can provide them and then let the rest of society

Software reliability, who cares?

Who cares?! You care! Because reliable software solutions mean greater confidence and fewer headaches.

At MCBA, we care enough to see that our applications are continually enhanced to meet user needs. We quality-assure our products with rigorous testing. And we stand behind them with responsive service and support.

Here's what satisfied users and resellers of MCBA applications have to say:

"From the viewpoint of reliability, MCBA packages get a very high rating. I think the main reason is that MCBA is constantly going through their programs and correcting them and improving them as needed. That kind of support is often not available with other software."
Charles E. Thomas, President
Computer Techniques and Information,
Phoenix, Arizona

"I'm very impressed with the MCBA system that we have. It works every single time. I've recommended it to many people."
Susan Power, Manager of Data Processing
SMC Pneumatics, Inc., Indianapolis, Indiana

"We have found that the MCBA packages meet our requirements better and are more bug-free than other comparable packages. We've been installing them for quite a broad range of users, and they are all very satisfied."
Dennis Henderson, President
S-Cubed Business Systems, La Jolla, California

11,000 users worldwide know they can rely upon MCBA software to save them time and money in their businesses. You can, too. Because at MCBA, we care about reliability.

Reseller inquiries invited.

Mini-Computer Business Applications, Inc.
2441 Honolulu Avenue, Montrose, California 91020
Telephone: (213) 957-2900 Telex: 194188

MCBA®

☐ I care.

Please send me free information for the MCBA applications I've checked below:

Name _____
Title _____
Company _____
Address _____
City _____ State _____
Zip _____ Country _____
Phone (_____) _____ ☐ Call me immediately.
I am a ☐ Reseller; ☐ End User; ☐ Consultant;
Other _____ CW 050983

Digital Equipment (PDP®-11 and VAX®—DIBOL)
☐ Accounting and Payroll ☐ Distribution
☐ Manufacturing ☐ Professional

Texas Instruments (DS990 and Business Systems—COBOL):
☐ Accounting and Payroll ☐ Distribution

Wang Laboratories (WANG VS—COBOL):
☐ Accounting and Payroll ☐ Distribution

Hewlett-Packard (HP 3000—COBOL II with IMAGE):
☐ Accounting and Payroll

Visit us at DEXPO™ East 83 Kiel Auditorium St. Louis, Missouri May 22-24, 1983 **Booth #102-103**

IN DEPTH

follow its own inclinations in providing the desired services.

Three classes of service exist. First, there is government services information, including guides to citizens' rights. Typical questions answered are: What time do government offices open? What are the local planning regulations? What do I do if I have lost my ID card?

Next there are the infrastructure services, sometimes provided by state-owned organs as in the case of the PTT's telephone directory, or by private industry as in the videotex system for travel agents.

Last come the bulk of the services provided by the private sector. Some are national data bases, others regional or local.

Consider one regional and local example, Marseilles' *Le Provencal*, a newspaper that was setting type by computer as far back as 1967 and has been terminal-based since 1972, a dedicated IBM user. Management expects there will be 250,000 electronic directory terminals installed in its coverage area by the end of 1984 and is planning for a base of 600,000 by the end of 1986. It is aiming to provide a large number of full-text, direct-access services, many of them aimed at the commercial market.

For the general public, *Le Provencal* is considering publishing a regional electronic newspaper as well as many data bases. One of those, called Hippotheque, is a horse-racing data base that specifies the runners, the jockeys, the state of the track, the form and the odds for major races.

Computing Time Bomb

Not far away in Marseilles, however, sits a computing time bomb — or, if not the bomb itself, the people who are going to activate it. Centre d'Etudes des Systemes d'Information des Administrations (Cesia) is a government department-straddling consultancy headed by Jean Salmona. Cesia's budget is small, a little over FF 100 million a year, coming from a mix of central and local government funds. But the name of the game once again is leverage: Most of what Cesia recommends is acted on under ministerial budgets.

Cesia consults about computerization of government in a context that lays down first that there must be more decentralization, next there must be greater public access and, finally, there must be greater administrative efficiency.

Salmona observes that computing has not so far changed administration, just computerized existing processes. "We need to go beyond that," he says. "The time has now come to go back to the start and ask the question, 'What is the new way of performing the administrative task?'

"It is urgent," he says, "because the role of government administration is bound to increase. The reasons are concerned with the current economic crisis, increasing complexity of modern life and an increasing demand for social services."

Yet at the same time, a nation that wants to be competitive has to decrease the weight of the administration (and not just in government) for those who have to deal with it.

Cesia works in four areas: the information system within the administration, the internal information flows within that administration, the information flows with outside organizations and the information flows with the citizen.

It is a tricky role for outsiders to play, and it can only work with strong ministerial backing. Cesia tends to have the tough jobs thrown its way.

For instance, Wang Laboratories, Inc. nearly obtained a large word processing system order recently from the Ministry of Culture, but the Ministry of Research & Industry was unhappy. Cesia did an analysis and found that 90% of the need could be satisfied by French equipment and that the other 10% was not urgent.

What would Salmona have advised if the whole project had been urgent? He would have told Research and Industry that there was no option but to go ahead with Wang. "Our task is to be administratively credible," he says. "What we have done is to bring the ministries together to try to build a five-year plan, to try to get them to specify what their requirements are expected to be. And then we are trying to

IBM SYSTEM/38
BUILDING BLOCK SOFTWARE...
READY TO GROW!

Get the most from IBM System/38 processing capabilities with Resource Management Systems (RMS/38) from PCR.

It's all native mode application software. Ready to go to meet computer needs today. Ready to grow when computer needs change tomorrow.

Build a Solid Foundation

Build a comprehensive data base management system with a full range of applications integrated in flexible modular design.

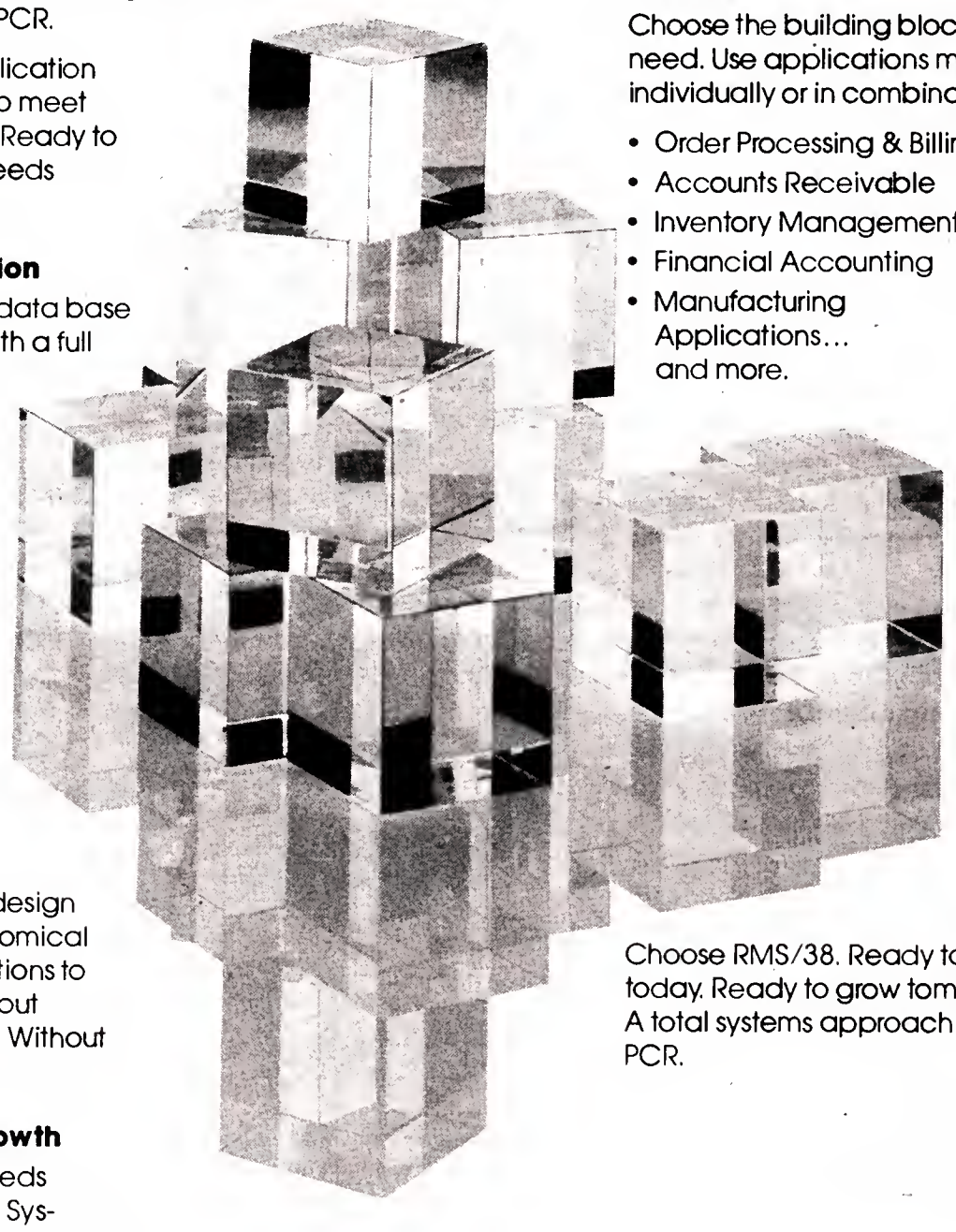
Distribution. Manufacturing. Financial. You specify user functions. RMS/38 delivers high performance, speed, ease and accuracy to carry the load.

Create a Flexible System

Create the system that suits your special requirements. Modular design makes it easy and economical to expand RMS/38 functions to your unique needs. Without extensive modifications. Without exorbitant costs.

Enjoy a System for Growth

When your computer needs change, use advanced System/38 programming techniques, a complete reference file and structured, well-documented RPG III code to expand capabilities without expanding costs.



Choose Building Block Software

Choose the building blocks you need. Use applications modules individually or in combination.

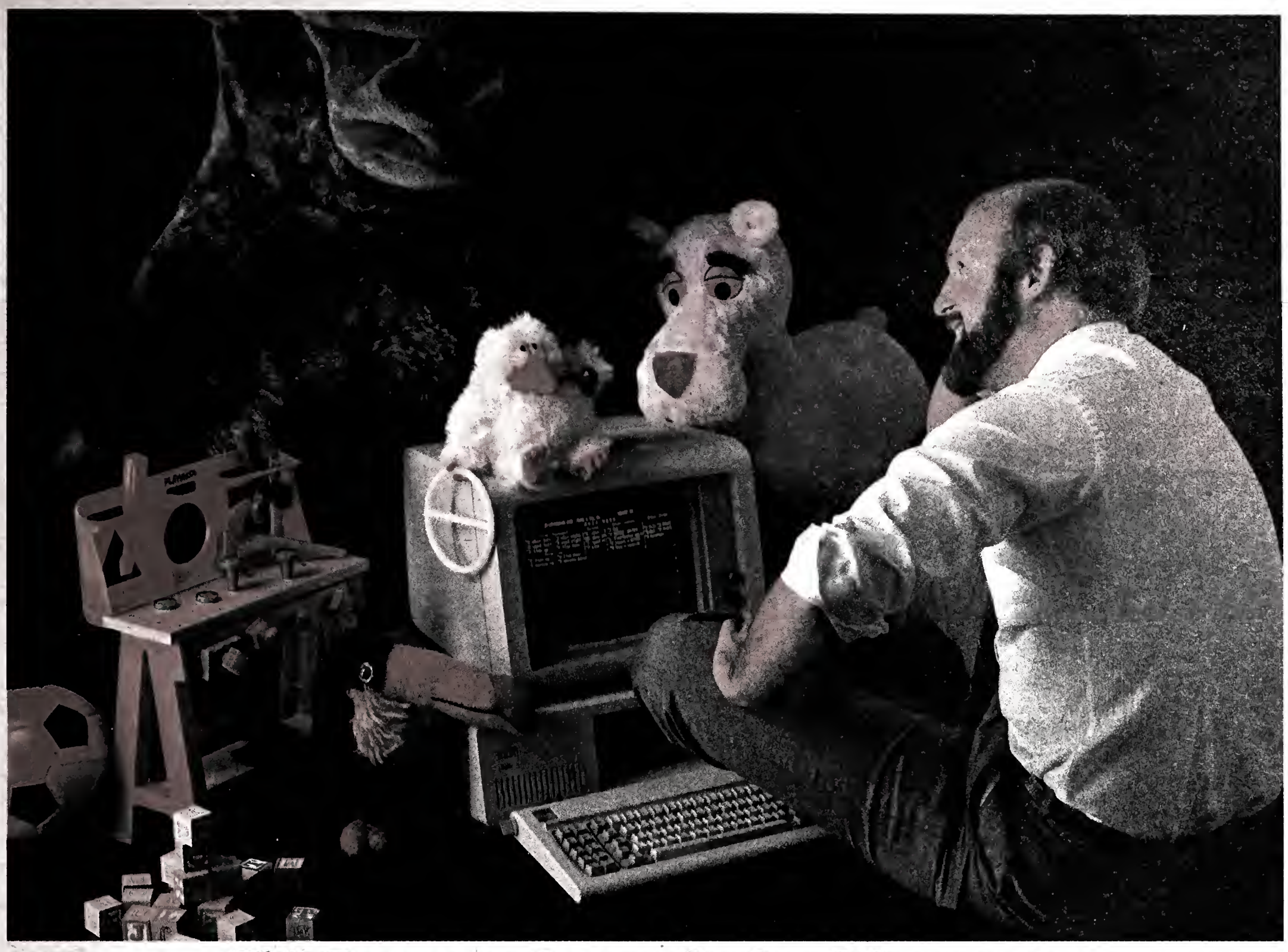
- Order Processing & Billing
- Accounts Receivable
- Inventory Management
- Financial Accounting
- Manufacturing Applications... and more.

Choose RMS/38. Ready to go today. Ready to grow tomorrow. A total systems approach from PCR.

Call (312) 932-2200 for complete details.
Or write:

pcr professional computer resources

2021 Midwest Road Oak Brook, IL 60521
Chicago • New York • San Francisco



This Programming professional deserves a lot more from his personal computer.

He's earned it. As a seasoned professional, he's learned to master some of the world's most advanced programming tools. Tools specially designed to meet the everyday demands of programming experts.

But as the owner of a personal computer, he's come to expect less. Less performance. Less sophistication. And less flexibility.

Why should programming a personal computer be any different?

Prior to the announcement of micro/SPF™ development software, experienced programmers felt programming a personal computer was a lot like playing with a toy. You couldn't take it seriously.

But today, there's micro/SPF,™ a solution to elementary program editing tools now offered with most micro-computers.

With micro/SPF™ you get the same procedures and commands experienced programmers are accustomed to using at work. By mimicking features found in standard SPF software, micro/SPF™ provides all the sophisticated utilities programming professionals expect.

Programming experts can take advantage of skills they've spent years perfecting.

Now, for the first time, mainframe software is available for personal computers. SPF screens are fully reproduced in logical sequence and each screen is formatted identical to those found in the SPF system.

In addition, micro/SPF™ comes equipped with the same primary and line commands, tutorial messages and program editor (with program function keys) experienced programmers are used to.

Programming professionals who've spent years perfecting the art of writing sophisticated code deserve to work with state-of-the-art tools, not toys. Find out how micro/SPF™ can help you do work-compatible programming on your personal computer today!



PHASER

PHASER SYSTEMS, INC 24 CALIFORNIA STREET
SAN FRANCISCO, CA 94111

☐ YES! I want to turn my personal computer into a professional programming tool! Send me **micro/SPF** for $249 right away!
☐ Bill me $41.50 for the Annual Software Maintenance Contract entitling me to all **micro/SPF** updates.
☐ Send me only the **micro/SPF** User's Manual for only $35.

METHOD OF PAYMENT:
☐ C.O.D. ☐ Visa ☐ Mastercard ☐ Check
Card # _____
Card Expires _____
Signature _____

PHASER SYSTEMS, INC. (415)434-3990

PERSONAL COMPUTER TYPE:
☐ IBM
☐ Other _____

AMOUNT OF MEMORY:
_____

TYPE OF DISK:
_____

OPERATING SYSTEM TYPE:
☐ DOS
☐ CP/M
☐ CP/M 86
☐ Concurrent CP/M 86
☐ MP/M
☐ MP/M 86
☐ Other _____

SOFTWARE PURCHASED FOR:
☐ Business Use
☐ Personal Use

OTHER SOFTWARE INTERESTS:
_____
_____

Name _____ Address _____
City _____ State _____ Zip _____
Telephone (_____) _____

IN DEPTH

put that together with the plans of French manufacturers."

It would be nonsense, he says, if, in building up industry, the government did not try to steer it toward the future national home market.

Cesia's work involves many projects. Some are obvious. Consider the small company with its annual declaration, which currently it must make four times to four ministries. Can that be turned into one declaration by making those ministries exchange the data between them, particularly as they each keep it on magnetic tape anyway?

The savings on data input costs should be formidable, for, as Salmona points out, every time data is input on France's 22 million workers, it costs FF 2 per worker entry.

But the real time bomb lies in a decree that has been awaiting implementation for some time. That decree states that all ministries will have to list and describe all public files.

This is freedom of information with a vengeance, for the project will deal with live administrative files. Salmona says he expects the decree to be implemented, and once it is, the process is irreversible. He points out that the process of computerization will lead to computerized records, and eventually, information catalogs listing all public files will become easily available in a society in which the majority have terminals. Once people have access to that information, they will not willingly give it up.

An administration open to a society, possibly via videotex? It is a temptation to ask whether the politicians have foreseen the impact, indeed, have any conception of what they are letting loose.

Two-Way Street

Technology is transforming society, but also society is transforming technology. A society dependent on others for technology's evolution is not free and independent. So control of technology's development is critical to controlling society's orderly progress.

But above all, one has to remember that France was the country of the French Revolution, which did much to transform the map of the world. The French forget little, the revolution least of all. They think they have seen what the next revolution is going to be about, that it is digital technology-based, and they believe it will have just as massive social, economic and political consequences.

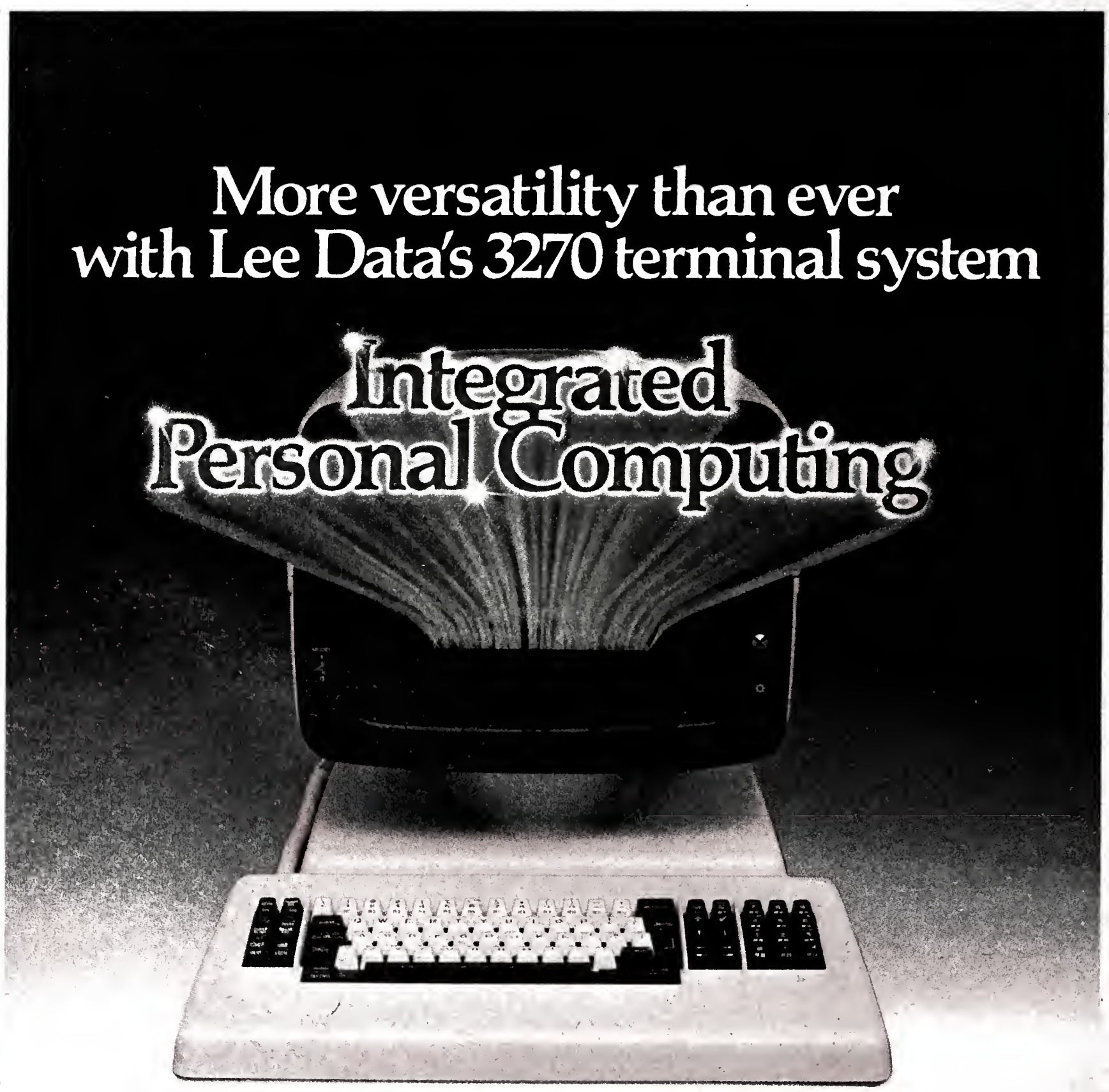
What is new in France is that society is setting down the road toward organizing itself to cope with the revolution, to accommodate the technology within a short time scale. One does not have to agree entirely with the French analysis to applaud the attempt.

About the Author

Rex Malik is a London-based freelance writer.

A 25-year veteran of computer journalism, Malik was a consultant to the British Broadcasting Co. for its computer literacy series.

More versatility than ever
with Lee Data's 3270 terminal system



Lee Data's new Personal Workstation now lets you enjoy all the advantages of professional business computing plus have both 3270 and asynchronous access to CPU-based applications—all from the same Lee Data workstation!

That's right! Completely-integrated, IBM-compatible personal computing —offering the latest functional capabilities and these value-added features:

Support for a wide variety of popular applications, including all compatible IBM Personal Computer software.

Personal Workstation-to-host file transfer capabilities that allow transfer of data from CPU-based files through existing system communications networks, meaning no new communications networks are ever required.

A single board design that incorporates both display station and printer support, as well as 128K of random access memory standard—with up to 256K of expanded memory on the same board. Plus a dual diskette drive feature that offers two 5¼-inch floppy diskettes, each with 320K of storage capacity!

And four standard system expansion slots for add-on requirements as your needs change.

3270 and asynchronous application access and now personal computing, too—all part of an advanced system design by Lee Data.

Let us show you how easily personal computing can become a part of your company's terminal system.

Call our system specialists toll free:

800/328-3998

Designers of innovative systems for the information worker

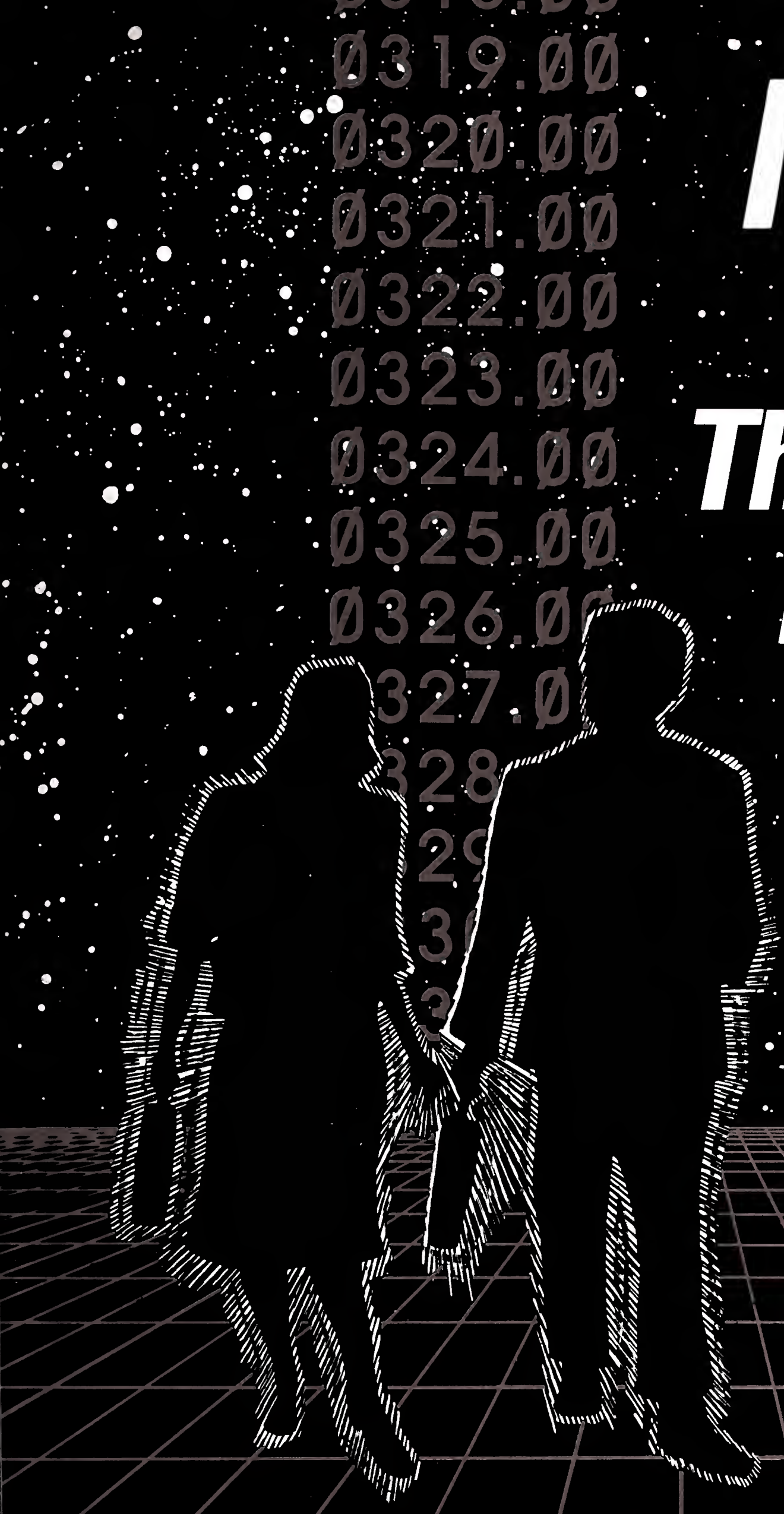
LEE DATA CORPORATION

7075 Flying Cloud Drive
Minneapolis, MN 55344

NCC '83

The Emerging Information Age

Computers, Communications and People



May 16-19, 1983
Anaheim, California



Anaheim Convention Center

NCC '83

Special 'Computerworld' Preview

The Conference

Anaheim Center to Hold Biggest NCC Exhibit Yet . . Preview/2
Imlay Discusses Implications of Being Keynoter . . . Preview/3
International Center Will Offer Aid Preview/4
Professional Development Seminars Slated Preview/5
Schedule at a Glance Preview/8-9
It's Not Known as a Software Show, But Preview/10
Don't Expect Introductions of New Systems Preview/10
Big Names in PBXs to Showcase Wares Preview/12
Where Does OA Begin? And End? Preview/12
Companies Offering Behind-the-Scenes Tours . . . Preview/14
Aiken Focus of Pioneer Day; Hopper to Keynote . . Preview/18
Film Forum to Unreel Movies of Varying Topics . . . Preview/22
Facilities Made 'Barrier-Free' for Handicapped . . . Preview/23

In and Around Anaheim

Orange County Nightlife Rivals Los Angeles Preview/24
Disneyland — Growing But Never Grown Up Preview/25
Knott's Berry Farm — Oldest U.S. Theme Park . . . Preview/27
Anaheim Museums — Small, Special, Private Preview/29
What's Bigger Than a 747 and Flew One Time? . . . Preview/30
L.A.'s the Place for Recreation, Culture Preview/34
All of California's Wineries Not in the North Preview/38
California's Missions Offer Cleansing Retreat Preview/39
There's Nothing Like a California Beach Preview/40

On the Exhibit Floor

Software Preview/41
Communications Preview/52
Systems Preview/59
Peripherals Preview/70
Power Systems Preview/80
Office Automation Preview/82
Other Things to See Preview/83

Center in Anaheim

By Katherine Hafner
CW Staff

ANAHEIM, Calif. — The data processing industry in all its enormity will descend en masse here next Monday.

This year's National Computer Conference will be held at the Anaheim and Disneyland Hotel Convention Centers. The conference will feature the biggest NCC exhibit floor ever — 320,000 square feet of air-conditioned space populated by displays from 635 exhibitors — in the Anaheim Convention Center and in six temporary structures on the convention center's parking lot.

The theme of this year's show is "The Emerging Information Age: Computers, Communications and People." The conference will include more than 80 technical sessions in nine program tracks and 22 Professional Development Seminars.

NCC '83 is sponsored by the American Federation of Information Processing Societies, Inc. (Afips), the Association for Computing Machinery, the Data Processing Management Association, the IEEE Computer Society and the Society for Computer Simulation.

The show's two main coordinators — Conference Chairman Donald B. Medley and Program Chairman Allen N. Smith — along with the full Afips staff and some 65 volunteers have been working for more than a year coordinating this year's show.

The nine tracks of the technical program focus on software engineering, management/education, data base/distributed systems, human and social issues, office automation, decision support, hardware, telecommunications and applications and personal computers.

The 13 full-day and nine half-day Professional Development Seminars will be held at the Hilton at the Park, across the street from the Anaheim Convention Center. The seminars

Early Registering Brings Hopes Of Shorter Lines

While registration for the National Computer Conference usually confounds attendees for hours on the Monday it opens, the American Federation of Information Processing Societies, Inc. (Afips) hopes that it will have pared down the crowd by that day.

This year for the first time, attendees who live close to the conference will be able to register in advance, according to Dennis Smoot, Afips' registration manager. The registration tent at the Anaheim Convention Center will be open from Saturday, May 7 through Sunday, May 15. Registration hours will be 9 a.m. to 5 p.m., May 7 through 14, and 2 p.m. to 6 p.m. on May 15.

For those traveling from afar to the conference and arriving on Sunday, May 15, the traditional "early bird" registration wil take place from 2 p.m. to 6 p.m. (An Early Bird Reception will be held that evening from 5 p.m. to 7 p.m. in the Grand Ballroom at the Anaheim Marriott.)

Those who do not register early will have to face the crowd starting at 7:30 a.m. opening day. There will be separate lines for those who have not registered at all and for those who preregistered too late to receive their badges, Smoot said.

While vendors have been allowed to distribute quite a few exhibitor guest passes in the past, this year will bring the advent of the vendor discount ticket, which chops $10 off the regular registration price. "With these coupons, we hope to cut back on the number of exhibitor registrations," Smoot said.

Exhibit guest passes and exhibit discount coupon lines will be color-coded red and blue, respectively, to match the colored logo on the back of each pass, Smoot said.

On-site registration for NCC '83 will cost $125. If you have preregistered, it will cost only $100. If you want to visit only the exhibit floor, the charge is $35.

If you can't face the crowd on Monday, registration will take place each day from 9 a.m. to 5 p.m. until Thursday, when it ends early at 4 p.m. Estimates on how long the wait will be were unavailable at press time.

Relax: You Can Register There

If you've let time get away from you, it's too late to preregister for the National Computer Conference. But take heart — you may register on-site for NCC '83.

On-site registrants pay the full conference price of $125, which allows them entrance to the technical sessions and to the exhibit floor, as well as a hardbound *Conference Proceedings*.

Registration hours are 2 p.m. to 6 p.m. on Sunday, May 15; 7:30 a.m. to 6 p.m. on Monday, May 16 through Wednesday, May 18; and 7:30 a.m. to 4 p.m. on Thursday, May 19.

Early bird registration is available this year for those who live close to the conference site. From Saturday, May 7 through Saturday, May 14, registration hours will be 9 a.m. to 5 p.m. in the registration tent.

Hotel Reservations Being Taken by Phone

ANAHEIM, Calif. — The Anaheim Housing Bureau is now accepting hotel room reservations by phone from those planning to attend the National Computer Conference.

The housing bureau can be reached at (714) 999-8939.

Attendees who were previously unable to reserve rooms at the hotel of their choice may find rooms available now because of last-minute cancellations.

Some hotels close to the convention center include the Disneyland Hotel, Hilton on the Park, Magic Carpet, Cavalier, Anaheim International, Zabys, Candy Cane and Galaxy.

to Hold the Biggest NCC Exhibit Floor Yet

are designed to provide information processing professionals with a broad exposure to technical trends, office automation strategies, innovative management and motivational programs and related industry management issues. The seminars cost $75 for the full day and $45 for a half day.

Imlay to Keynote

In a break with tradition, this year's conference will hear only one instead of three keynote addresses. Slated for the Anaheim Marriott, the keynote will be delivered by John P. Imlay of Management Science America. Imlay's speech, titled "The Information Transformation — A Study in Survival," will focus on the growth of information technology.

Imlay will look at the history of rapid change in the DP industry. He will discuss the current status of computer manufacturing, communications, computer services, office automation, personal computing and software.

In examining the future, Imlay will consider the effect computer technology will have on the quality of life in the year 2001 and beyond and present a series of "Declarations of Survival."

The Harry Goode Memorial Award, established in 1964 to honor outstanding contributions to the information processing field, will be awarded at the Monday keynote session. Afips, the conference sponsor, has traditionally kept mum on the winner of the Goode Award until its presentation.

Pioneer Day

The accomplishments of the first winner of the Goode Award, Howard Hathaway Aiken, and the Harvard Computation Laboratory will be honored on Wednesday. Pioneer Day will include two sessions and a panel discussion, held at the Marriott Hotel. The first session, "The Machines," will begin at 1:30 p.m. and focus on the architecture, functions and components of the Mark I through the Mark IV. "The Laboratory," held from 3:30 p.m. to 5:30 p.m., will look at efforts in numerical methods, switching theory, component design, computational linguistics and data processing and their interrelation in the academic program at the Harvard Computation Laboratory.

The panel disccusion, "Assessment of Howard Aiken's Contributions," will focus on the technical and administrative accomplishments of Aiken. Captain Grace Hopper will be the keynote speaker for the Pioneer Day Technical Program.

NCC '83 will also include:

- An international visitors center that will offer interpreters and a "friend-finder minicomputer," which lists names and hotels of international visitors from the conference-goer's homeland.
- The Film Forum, where films and videotape productions of recent industry advancements will be presented.
- An Early Bird Reception for conference attendees on Sunday, May 15, from 5 p.m. to 7 p.m. in the Grand Ballroom at the Anaheim Marriott.

Six Temporary Buildings Constructed

ANAHEIM, Calif. — The commitment to hold the National Computer Conference here is a deep-seated one, according to Jim Kroell, director of conferences for the American Federation of Information Processing Societies, Inc. (Afips). Unfortunately, however, the Anaheim Convention Center has not grown along with the number of NCC attendees.

In order to accommodate the 635 vendors who will be exhibiting their wares at this year's conference, Afips is constructing six temporary buildings — 60-ft wide, 30-ft high and 310-ft long — in the convention center parking lot. The structures are slated to be completed today after four frenzied days of construction between May 2 and 5, during which crews of 200 worked from sunrise to midnight.

The Sprung structures, built by Sprung Instant Structures Ltd. of Edmonton, Canada, are comprised of aluminum frames covered with plasticized fabric. They are fully equipped with electricity and air conditioning and will accommodate about 600 of the 3,200 booths at the conference, Kroell said.

This is the first year that temporary buildings have had to be erected for the conference to meet the attendance, according to Kroell who, despite the hassle and expense of constructing the buildings, considers the process of planning for NCC still enjoyable. "In this crazy business, if you didn't enjoy it, it would drive you out of your mind," he said.

Imlay Discusses Implication of Being Chosen Keynoter

By Bill Laberis
CW Staff

The selection of a software and services industry spokesman to keynote the National Computer Conference this year is a tacit recognition of software as the vital part of the future of computing.

So said the man chosen as keynote speaker, John P. Imlay Jr., chairman and chief executive officer of Management Science America, Inc. (MSA) and toastmaster of the software and services industry.

Imlay said this year's NCC marks the first time that a representative of the $8 billion software and services sector has been chosen as keynote speaker, a distinction that "is flattering to me and very flattering for our industry."

The unpredictable Imlay, who once appeared on stage with a live tiger to address an industry group, promised in a pre-NCC interview to deliver more of the same brand of humor that has characterized the hundreds of speeches he has delivered worldwide over the past several years.

His keynote address, "The Information Transformation — A Study in Survival," will feature an overview of the information industry, as well as a call to establish a National Information Committee to develop an information strategy for the U.S., he said.

If formed, this committee, supported by the Association of Data Processing Service Organizations, Inc. (Adapso), will initiate a two-year study to "give government a window on what information technology will be like in the 1990s and then have government redirect its education initiatives accordingly," Imlay will tell conference attendees. Similar calls for government-sponsored initiatives have been heard in recent months as U.S. vendors, such as the software companies represented by Adapso's membership, have become increasingly aware of the competitive international marketplace in which they find themselves operating.

His address will further explore the future of computing, its impact on the quality of life and whether it will be destroyed or enhanced by information technology. Imlay will also attempt to outline the changing role of computers in the corporate setting, where "computing is fast becoming a competitive weapon that will hold a different role where the corporation cannot succeed without proper information handling," he said.

Imlay, whose own company last year crested the $100 million mark in total sales, said there will be two or three "big players" in the software industry five years in the future. These larger companies will expand product offerings, becoming more niche-oriented, perhaps with the acquisition of key niche companies.

MSA, an applications software house, will move into more vertical market offerings, such as banking, insurance and retailing, Imlay predicted.

But these big companies will not push the smaller ones out of existence, he argued. On the contrary, "there will be plenty of room for the smaller niche players, who will continue to reap healthy profits and increased sales from the narrow markets they work within."



CW Photo by P. Gillin

MSA Chairman John P. Imlay Jr. at Recent Conference

Asked if he believes the image of NCC is changing from that of a hardware showcase, Imlay said, "I think it will become an information conference rather than a computer conference as such."

He said that on-line capabilities and telecommunications advances in recent years have given software vendors the opportunity to display more effectively their products, often as part of a hardware/software package the vendor is selling.

"My selection as keynote speaker is an important part of this evolution," Imlay said.

International Center Will Offer Aid

ANAHEIM, Calif. — The language of DP can be confusing even to those whose native tongue is English. But foreign visitors to the National Computer Conference who find themselves in a fog will have a place to go if they are in need of a translator or a compatriot.

At last year's conference, about 5,000 people used the International Center. This year, people from outside the U.S. can avail themselves of services offered by the center, which will be located in the Garden Grove Room of the Anaheim Convention Center.

Harvey Marks, chairman of special activities for the conference, will focus on the idea of the International Center as a service center. "People from outside the 'Lower 48' who find themselves encountering language and cultural barriers will be able to get translators from the center," Marks said.

The center also will provide people with contacts for currency exchange and special activities. It will be open Monday, Tuesday and Wednesday from 9:30 a.m. to 4:30 p.m. and Thursday until 4 p.m.

Tanaka, Kemeny to Receive Awards at Keynote Session

ANAHEIM, Calif. — Three awards will be presented at the National Computer Conference Keynote Session next Monday at 9:30 a.m. in the ballroom of the Anaheim Marriott.

The Harry H. Goode Memorial Award will be given to an outstanding contributor to the information processing field. The American Federation of Information Processing Societies, Inc. (Afips), which sponsors NCC and gives the award, has traditionally kept secret the name of the Goode Award winner until it is presented.

The Goode Award was established in 1964 to honor Dr. Harry H. Goode, former chairman of the National Joint Computer Committee.

A second award to be given during the keynote session is the Distinguished Service Award. This year's recipient is Dr. Richard I. Tanaka, president of Systonetics in Fullerton, Calif.

Tanaka is cited "in recognition of his many years of dedicated service to Afips and the international information processing community." Tanaka's contributions to Afips date back almost 20 years, when he served as program chairman and general chairman of Afips Fall Joint Computer Conferences in San Francisco and served on the Afips Board of Directors.

Tanaka was instrumental in bringing about a series of computer conferences with other countries. He served as president of the International Federation of Information Processing (Ifip) from 1974 to 1977.

Tanaka received his B.S. and M.S. degrees from University of California at Berkeley. He received a Ph.D. in electrical engineering and physics from California Institute of Technology in 1958. He is coauthor of *Residue Arithmetic and its Applications to Computer Technology* (McGraw-Hill).

The third award to be given at the keynote session is Afips' first annual Education Award, which will go to Prof. John G. Kemeny, professor of mathematics at Dartmouth College in Hanover, N.H. The former president of Dartmouth was selected for the Afips award because of his "visionary efforts at making computing universal for students of all disciplines."

Kemeny was co-developer of the Basic programming language and the Dartmouth Time-Sharing System. These efforts were instrumental in establishing the now widely accepted concept that a computer is an important tool for practitioners in all academic areas and all occupations.

Kemeny, who has been at Dartmouth since 1953, received his Ph.D. in mathematics from Princeton University in 1949.

A TESTIMONIAL FOR THE BURROUGHS B20 FROM SOMEONE WHO SPENT 17 YEARS AT IBM.



Dr. W. LEE SHEVEL
Senior Vice President, Corporate Operations, Burroughs Corporation

Some people think that because IBM is bigger than Burroughs, they're better than Burroughs. After working for many years at IBM, I can tell you that bigger doesn't necessarily mean better.

Take small business computers: the Burroughs B20 and IBM's Datamaster.

The B20 Series can offer up to five times more memory capacity, can store twice as much data, can have more workstations, offer more kinds of printers, and has a 25% bigger screen (to display more data at once).

With its powerful 16-bit processor and up to 640K bytes of RAM in each workstation, the Burroughs B20 gives each user his own computer, but with the power, memory and data base that was once associated only with mainframes.

More importantly, the B20 can be networked with other B20's (while sharing the same data base, printer, or mainframe communications), so everyone is always working with the latest, up-to-date information.

And because the B20 supports all four industry-standard languages (COBOL, FORTRAN, Pascal and BASIC), users can select the language best suited to their individual needs. With IBM's Datamaster you have one choice—BASIC.

In operating systems, the B20 will soon give you a choice of CP/M® or MS-DOS.™ Or you can choose BTOS, our own operating system, which has more features.

To operate the B20, all you do is open the carton, plug it in,* choose one of our many business software programs (payroll, accounts receivable, inventory control, etc.), and you're in business. (Our step-by-step training manuals are so easy to use, you can be doing sales projections, accounting tasks, or scheduling in a matter of hours.)

If there are any questions, just call the Burroughs hot line. Trained Burroughs computer specialists will help with any problem that arises. (90% of all questions are answered in the first call.) We also have service depots in 19 cities throughout the U.S., or you can choose on-site servicing.

So, when it comes to choosing between IBM and Burroughs, take it from someone who knows both.

The questions isn't who's bigger. It's who's better.

Burroughs

THE QUESTION ISN'T WHO'S BIGGER.
IT'S WHO'S BETTER.

*B22 mass storage unit requires installation by a qualified Burroughs service representative.
CP/M is a registered trademark of Digital Research, Inc.
MS-DOS is a trademark of Microsoft Corporation.
For more information call 1-800-621-2020 or mail coupon below.

I'm interested in the Burroughs B20 small business computer.
Please send me more information.

Name_____
Title_____
Company_____
Address_____
City_____ State_____ Zip_____
Telephone_____

Send to: Burroughs Corporation
Dept. B20, Box 10934, Chicago, IL 60610

© 1983 Burroughs Corporation CW-509

Professional Development Seminars Slated

ANAHEIM, Calif. — Twenty-two full and half-day Professional Development Seminars will be offered at the National Computer Conference here next week. They will cover computer graphics, communications, data security, data management, current issues and new technology.

The Professional Development Seminars are in-depth courses that provide training in certain aspects of the computer field, explained Linda Mooskin, a staff member of the American Federation of Information Processing Societies, Inc. In this respect, the seminars differ from the technical sessions, whose format is less instructive than informational.

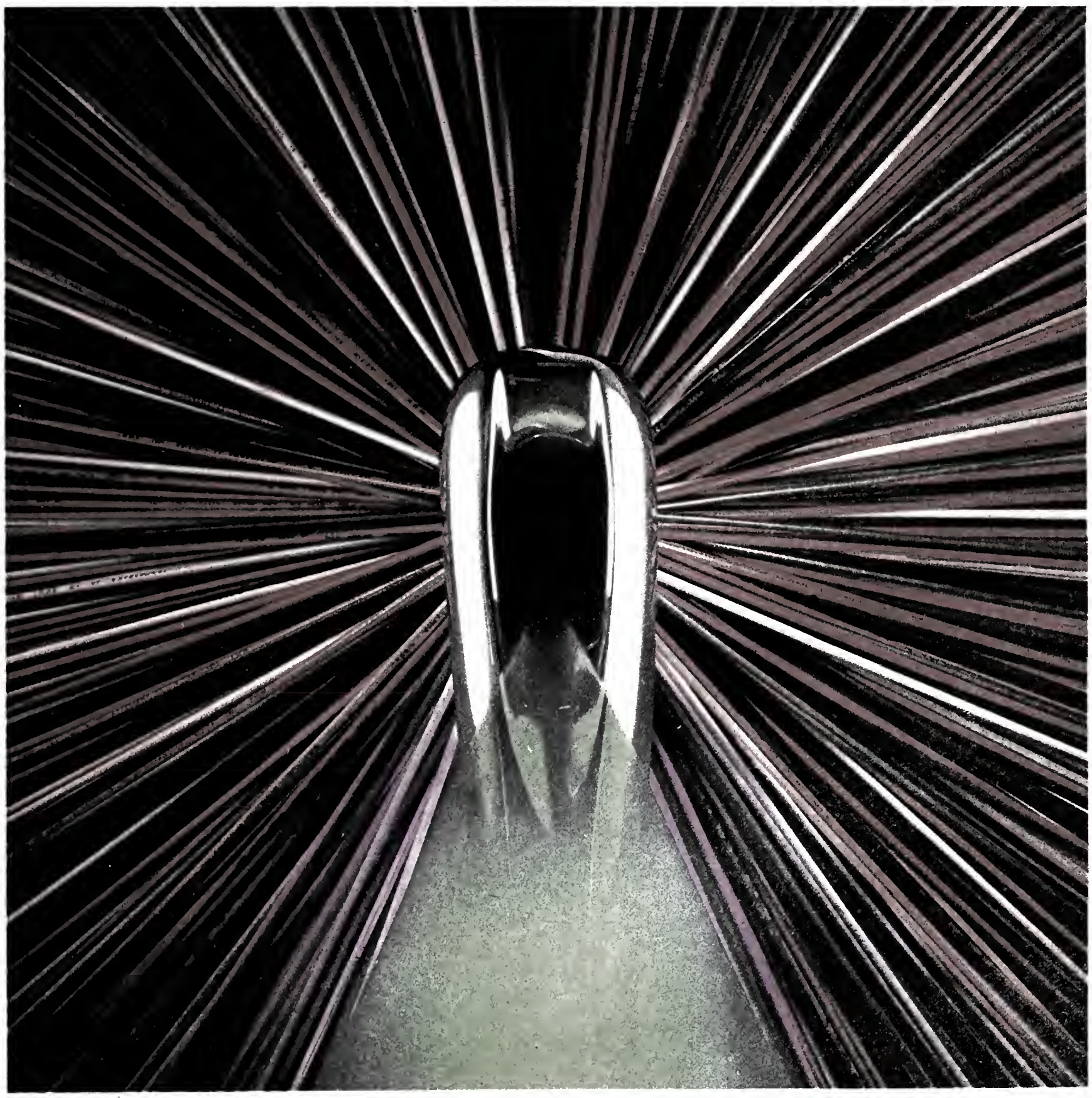
The seminars will be given at the Hilton On the Park, a short walk from the Anaheim Convention Center. Full-day sessions on Tuesday and Wednesday, which cost $75 each, begin at 9 a.m. and end at 4:30 p.m. Half-day sessions, which cost $45 each, will take place on Monday (1:30 p.m. to 4:30 p.m.) and Thursday (9 a.m. to noon).

The half-day seminars on Monday, May 16 include "Learning From Failure," led by Robert L. Glass of Computing Trends in Seattle, Wash.; "Plotting Your Computer Career," led by Herb Safford of GTE Data Services, Inc., Marina Del Rey, Calif.; "Organizing the DP Manager's Time," led by Ronald A. Episcopo of Software Design, Inc. in New York; "Myths of the Computer Consultant," led by William M. Rieken Jr., William Rieken Consultants, San Mateo, Calif.; "Computer and the Law," with William Fenwick of Davis, Stafford, Kellman & Fenwick in Palo Alto, Calif.; and "Word Processing," with Addie Mattox of Coopers & Lybrand in Los Angeles.

Tuesday's six full-day seminars include: "How to Select a Business Computer," led by Arnold M. Roberts of ADC Associates, Palo Alto, Calif.; "Survey of Electronic Mail Systems," offered by Susen Kay of Hannagan & Associates, Schaumburg, Ill.; "Data Analysis Techniques," led by Richard C. Perkinson of QED Information Sciences, Inc., Wellesley, Mass.; "Improving Productivity of Cobol Programmers," led by Dr. Robert Grauer, University of Miami, Coral Springs, Fla.; "End-User Facilities in the 1980s," led by James A. Larson, a consultant in Roseville, Minn.; and "Motivating Data Processing Professionals," led by Dr. Donald Warrick of Management Development Foundation, Ltd., Colorado Springs, Colo.

On Wednesday, five full-day seminars are slated: "Introduction to Computers: Everything You Need to Know, But Didn't Know Enough to Ask," led by Joseph Rothberg of Computer Education, Inc., Silver Spring, Md.; "Disaster Recovery," offered by Robert A. Santis of EDP Security in Waltham, Mass.; "Human Factors in Using Computer Systems," led by Bruce Sanders, a consultant from Vacaville, Calif.; "Computer Graphics & Reporting Business and Financial Data," offered by Irwin M. Jarett of IMJ & Associates, Inc., Springfield, Ill.; and "Data Processing to IRM: Managing the Transition," with Daniel S. Appleton of Appleton Co., Inc. in Manhattan Beach, Calif.

Five half-day seminars will be offered on Thursday: "Letting Go of Stress," with Dr. Jackie Schwartz of Schwartz & Associates, Los Angeles; "The Power of Silent Signals," with Maxine McIntyre, a consultant in Fair Oaks, Calif.; "Project Management," with Linda T. Taylor of Gaskell & Taylor in Los Angeles; "Synergistic Management," led by Warren Simpson of Office of Personnel Management in Chicago; and "Shortest Distance to Improved Productivity Is a Circle — Quality Circle," led by J. Michael Donovan of Productivity Development Systems, Inc. in Clearwater, Fla.



When we thread the needle, communication costs less.

The 3M Videodata® System carries thousands of messages on a single cable. It's an information utility that's cutting communication costs for 250 companies worldwide.

One cable is threaded through a factory or any spreadout institution. Up to 10,000 information sources can be connected. Computers, word processors, TV monitors and more can handle data simultaneously and never interfere with each other.

Our system can cut installation and expansion costs in half compared with the cost of routing and re-routing conventional two-wire hookups.

Hearing the needs of the information age has helped 3M pioneer over 600 products for the voice, video and data communication field. We make everything from computer diskettes to high-speed translators that put computer data on microfilm.

And it all began by listening.

3M hears you...

For your free 3M Voice, Video and Data Communications Brochure, write: Department 053105/3M, P.O. Box 4039, St. Paul, MN 55104.

Name_____

Address_____

City_____ State____ Zip____

Or call toll-free: **1-800-323-1718**, Operator 365. (Illinois residents call 1-800-942-8881.)

3M

Available for IBM, DG ECLIPSE and DEC VAX

SAS... Power and Flexibility to Meet All Your Needs

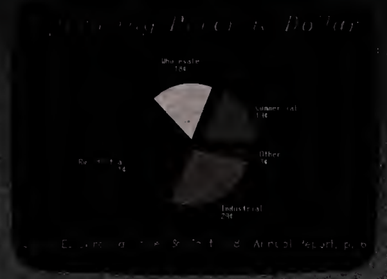


SAS/GRAPH

SAS products provide an integrated system for:

- data management, statistical analysis and report writing—SAS®
- color graphics—SAS/GRAPH™
- econometric forecasting, modeling and row-and-column financial reporting—SAS/ETS™
- full screen data entry, editing, letter writing and spreadsheet financial reporting—SAS/FSP™
- interface to IMS/VS or CICS DL/I data bases—SAS/IMS-DLI™
- operations research tools for business planning and scheduling—SAS/OR™





SAS/GRAPH

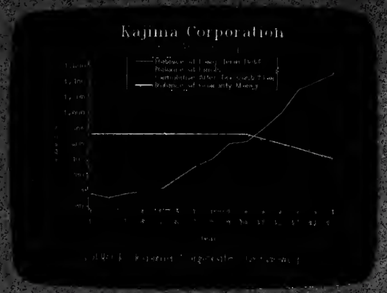
With the SAS System you get the power to handle all your needs quickly and efficiently. Plus you get a flexible system that can grow as your needs grow and change.



SAS/GRAPH

You get a twofold advantage with the SAS System. A library of ready-to-use procedures gives you the power to analyze data without formal training. SAS even provides an on-line help facility. Or you can create your own help program. With a few English-like commands, you can use SAS for data analysis, market research, capacity planning, financial reports, summary statistics, charts, cross, personnel reports and many other jobs.

and store data SAS... you can invoke these programs command, giving you easy access the data today that will help you make important business decisions for tomorrow.

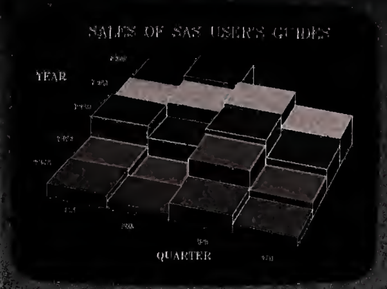


SAS/GRAPH

In short, the SAS System gives you the analytical tools for a complete Decision Support System—integrating modeling, statistical manipulation, graphics and multiple data sources.



SAS/ETS



SAS/GRAPH

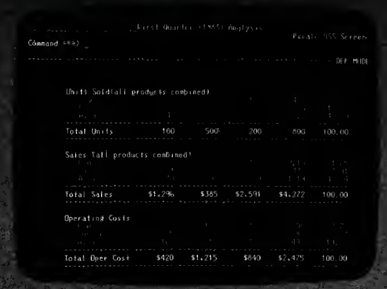
When you lease the SAS System, you don't get a static product. You get a system that grows and changes as your needs grow and change. Originally supported only on IBM 370,30xx/43xx under OS and TSO, SAS products currently run under OS, DOS/VSE and SSX in batch, and interactively under TSO, VM/CMS and ICCF.



SAS

What's more, the SAS System now runs on Digital Equipment Corporation's VAX™ 11/780 series.

You get the same benefits of the SAS System on many as on mainframes. So see for yourself. Take advantage of our free trial.



SAS/FSP



SAS/GRAPH

But that's not all. Our continuing development efforts are backed by a complete library of user documentation, a comprehensive training curriculum, a full-time technical support staff and an international users group.

In fact, users have ranked SAS in Datapro Research Corp.'s Top Rated Group for the past seven years. In the latest survey, SAS was one of the only two software packages to receive the honor.

The best in software and service. At a price you can afford.

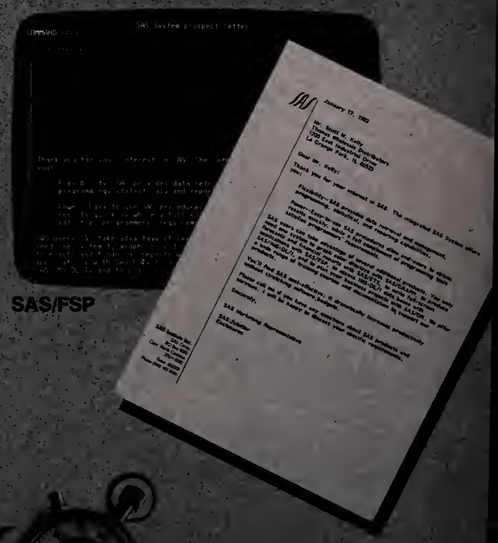
SAS Institute Inc., SAS Circle,
Box 8000, Cary, NC 27511 USA.
Telephone (919) 467-8000. Telex 802-935

SAS Institute GmbH, Rohrbacher Strasse 22, D-6900 Heidelberg 1, West Germany. Telephone 06221-29014. Telex 461581.

SAS Software Limited, The Centre, 68 High Street, Weybridge, Surrey KT13 8BL, UK. Telephone 0932-55855. Telex 946138.

SAS Institute (NZ) Ltd., Level 9, Greenock House, 39 The Terrace, PO Box 10-109, Wellington, New Zealand. Telephone (04) 727-595. Telex NZ 31525.

SAS Software Pty. Ltd., Level 60, MLC Center, 19-29 Martin Place, GPO Box 4345, Sydney, NSW 2001, Australia. Telephone (02) 235-2199. Telex AA 71499.



SAS/FSP

SAS® saves time.

NCC '83: The Emerging Information Age

Schedule at a Glance

	10:00–11:30 a.m.	MONDAY 1:30–3:00 p.m.	MONDAY 3:30–5:30 p.m.	TUESDAY 8:30–10:00 a.m.	TUESDAY 10:30 a.m.–12:00 noon	TUESDAY 1:30–3:00 p.m.	TUESDAY 3:30–5:30 p.m.
SOFTWARE ENGINEERING Toni Shetler	**KEYNOTE SESSION** **John P. Imlay, Jr.** **Management Science America, Inc.**	**M1-1** Communicating with Databases in English Martha Evens Illinois Institute of Technology *G*	**M2-1** Artificial Intelligence: Blue Sky or Tools of the Future? Roy Maxion Xerox Corp. *1*	**T1-1** Writing Less Code; An Approachable Ideal Naomi Lee Bloom American Management Systems, Inc. *A*	**T2-1** Software Management for the '80's Steven M. Jacobs TRW *A*	**T3-1** Reducing Program Development Risks with Reusable Code Larry Martin Raytheon Computer Services *G*	**T4-1** Software Engineering Techniques and Approaches Arthur Pyster TRW *1*
MANAGEMENT/EDUCATION Bennet P. Lientz Ron Lemos		**M1-2** Maintenance: Motivation of Maintenance Personnel Dr. J. Daniel Couger University of Colorado *J*	**M2-2** Career Development in the 80's Virginia C. Walker Department of Energy *G*	**T1-2** Strategic Systems Planning James F. Ware Nolan, Norton & Company *1*	**T2-2** Increasing Productivity of Personnel Howard Bromberg Bromberg Computer Consultants *3*	**T3-2** Practices in Staffing Software Projects Alyce Jackson Technology Research Labs *J*	**T4-2** Managing the Audit of Complex Computer/ Communications Systems Jerald Savin Main, Hurdman *G*
DATABASE/DISTRIBUTED SYSTEMS Don Hyde		**M1-3** Current Database Machines Michael Plesset Aerospace Corporation *A*	**M2-3** Research Database Machines Dr. Paula Hawthorn Lawrence Berkeley Laboratory *J*	***T1-3*** Fifth-Generation Computers Franklin F. Kuo SRI International *E*	**T2-3** Relational-Database Management Dr. Phil Shaw IBM *E*	**T3-3** Modeling Enterprise Data Dr. Gordon B. Davis University of Minnesota *3*	**T4-3** Microcomputer Database Management Systems Dr. Evan Ivie Brigham Young University *A*
HUMAN AND SOCIAL ISSUES David Holzman			**M2-4** Organizations, Information Systems, and Office Effectiveness James C. Taylor Socio-Technical Design Consultants, Inc. *A*				
OFFICE AUTOMATION Daniel J. Drageset		**M1-4** Office Automation: State-of-the-Art and Key Issues Amy Wohl Advanced Office Concepts *E*	**M2-5** Measuring Office Productivity Michael Hammer Hammer & Company *E*	**T1-4** Computer Teleconferencing Thomas B. Cross Cross Information Company *F*		**T3-4** Management and Professional Work Stations Addie Mattox The Mattox Group *E*	**T4-4** Electronic Mail Walter Ulrich Walter Ulrich Company *3*
DECISION SUPPORT SYSTEMS Todd Zeising				**T1-5** DSS Design Methodologies—I Dr. Daniel T. Lee University of Hartford *G*	**T2-4** DSS Design Methodologies—II Dr. Daniel T. Lee University of Hartford *G*	**T3-5** Approaches to DSS Theodore Klein Boston Systems Group *1*	***Nonconventional*** **T4-5** Dynamic & Reconfigurable Architectures: Software Problems Dr. Carl Davis Ballistic Missile Defense *J*
HARDWARE Dick Lampman		**M1-5** High Performance Winchester Trends Tom Williams Computer Design Magazine *1*		**T1-6** High Performance Computing Douglas Theis Aerospace Corporation *J*	**T2-5** Microcomputer Design Topics Steve Cooper Intel Corporation *J*	**T3-6** Fault-Tolerant Systems Omri Serlin Itom International *A*	**T4-5** Dynamic & Reconfigurable Architectures: Hardware Structures Steven and Svetlana Kartashev Dynamic Computer Architecture, Inc. *J*
TELECOMMUNICATIONS AND APPLICATIONS Randy Pilc Lorette Cameron		**M1-6** Protocols for Computer Communications Herbert V. Bertine Bell Laboratories *F*	**M2-6** Advances in Computer Communications Networks Eberhard F. Wunderlich American Bell, Inc. *3*	**T1-7** Voice Processing James L. Flanagan Bell Laboratories *3*	**T2-6** Human Voice Communication with Computers J. Michael Nye Marketing Consultants International *F*	**T3-7** Distributed Processing Dale Kutnick The Yankee Group *F*	**T4-6** Network Security J. Michael Nye Marketing Consultants International *F*
PERSONAL COMPUTERS Tom Fox Lance Leventhal		**M1-7** Microcomputer Software Protection Wayne Green Wayne Green, Inc. *3*	**M2-7** Personal Computer Industry: The Experts Forecast the Future Portia Isaacson Future Computing, Inc. *F*		**T2-7** Business Planning on Microcomputers David M. Chereb Getty Oil Company *1*		**T4-7** Personal Computer Industry: The Experts Forecast the Future Portia Isaacson Future Computing, Inc. *E*

PROFESSIONAL DEVELOPMENT SEMINARS Presented at the Hilton on the Park **Full-day sessions—9:00 a.m. to 4:30 p.m.** **Half-day sessions—9:00 a.m. to 12:00 noon or 1:30 p.m. to 4:30 p.m.**

MONDAY May 16	Learning from Failure **(MC)** Robert L. Glass—*Seattle University*, 1:30 p.m. to 4:30 p.m.	How to Measure Performance of the DP Professional—Data Center Operations and Telecommunications Systems **(MD)** Herb Safford—*GTE Data Services*, 1:30 p.m. to 4:30 p.m.	Organizing the Data Processing Manager's Time **(ME)** Ronald A. Episcopo—*Software Design Associates*, 1:30 p.m. to 4:30 p.m.
	Myths of the Computer Consultant **(MF)** William M. Rieken, Jr.—*William Rieken Consultants*, 1:30 p.m. to 4:30 p.m.	Computers and the Law **(MG)** William Fenwick—*Fenwick, Stone, Davis & West*, 1:30 p.m. to 4:30 p.m.	Integrating Word and Data Processing **(MH)** Addie Mattox—*The Mattox Group*, 1:30 p.m. to 4:30 p.m.
TUESDAY May 17	How to Select a Business Computer **(TA)** Arnold M. Roberts—*ADC Associates*, 9:00 a.m. to 4:30 p.m.	Survey of Electronic Mail Systems **(TB)** Susen S. Kay—*Hannagan & Associates*, 9:00 a.m. to 4:30 p.m.	Data Analysis Techniques **(TC)** Richard C. Perkinson—*QED Information Science, Inc.*, 9:00 a.m. to 4:30 p.m.
	Improving Productivity of COBOL Programmers **(TD)** Dr. Robert Grauer—*University of Miami*, 9:00 a.m. to 4:30 p.m.	End User Facilities in the 1980s **(TE)** James A. Larson—*Honeywell*, 9:00 a.m. to 4:30 p.m.	Motivating Data Processing Professionals **(TF)** Dr. Donald Warrick—*Management Development Ltd.*, 9:00 a.m. to 4:30 p.m.

WEDNESDAY

THURSDAY

	8:30–10:00 a.m.	10:30 a.m.–12:00 noon	1:30–3:00 p.m.	3:30–5:30 p.m.	8:30–10:00 a.m.	10:30 a.m.–12:00 noon
SOFTWARE ENGINEERING Toni Sheter	**W1-1** Directions for Software Engineering: Now and in the Future William E. Riddle Software Design & Analysis, Inc. *A*	**W2-1** Software Technology for Adaptable Reliable Systems Larry E. Druffel Department of Defense *J*	**W3-1** Experience in Ada* Applications Grady Booch Consultant *A* (*ADA IS A REGISTERED TRADEMARK OF THE DEPARTMENT OF DEFENSE)	**W4-1** Future Visions: Ada* Environments of the 1990's Hal Hart TRW *A*	**H1-1** Software Engineering by the Year 2000 Jock Rader Hughes Aircraft *E*	**H2-1** Effective Software Documentation–Online Documentation Rita Gail MacAuslan Sanders Federal Systems Group *J*
MANAGEMENT/EDUCATION Bennet P. Lientz Ron Lemos	**W1-2** Maintenance: Systems Maintenance Management Dr. Bennet P. Lientz UCLA *1*	**W2-2** Software Maintenance: Application Systems Perspective Ned Chapin InfoSci., Inc. *G*	**W3-2** Control of the Maintenance Function Nicholas Zvegintzov Zvegintzov Associates Eleanor G. Maurer Blue Cross of California *3*	**W4-2** Computer and Video Disks in Learning Alfred Bork University of California, Irvine *1*		**H2-2** Computer Literacy: Industry Expectations vs. Higher Education's Plans Dr. Jason Frand UCLA *A*
DATABASE/DISTRIBUTED SYSTEMS Don Hyde				**W4-3** Applications in Distributed-Database Management Dr. C. Mohan IBM Corporation *F*		
HUMAN AND SOCIAL ISSUES David Holzman	**W1-3** Managing Computer Change Dr. David G. Hopelain Jet Propulsion Labs *E*	**W2-3** Measuring the Impact of Information Techniques Dr. Jack M. Nilles University of Southern California *3*	**W3-3** Living with Computers: the Social Impacts John Ruchinkas/Lynn Svenning University of Southern California *E*	**W4-4** Computerized Society—Resilient or Vulnerable? Dr. Rein Turn California State University, Northridge *J*	**H1-2** Man/Machine Interaction David Holzman Holzman & Associates Inc. *J*	**H2-3** Computer Aids to the Handicapped J. Stephen Brugler Telesensory Systems, Inc. *F*
OFFICE AUTOMATION Daniel J. Drageset			**W3-4** Organizational and Implementation Issues Dr. Philip James Northrop Corporation *F*		**H1-3** Beyond Productivity: the Future of Office Automation N. Dean Meyer N. Dean Meyer & Associates *F*	**H2-4** Personal Computers in the Office Louis J. Brocato USDA *E*
DECISION SUPPORT SYSTEMS Todd Zeising	**W1-4** Planning for the EIS/DSS/EUC Environment Gary K. Gulden Index Systems *G*	**W2-4** Corporate DSS on Micros Philip Evans Ferox Micro Systems *1*	**W3-5** Distributed Financial Planning Ken Ross Ross Systems, Inc. *1*		**H1-4** DSS and Graphics Barry Frankel Applied Data Research *A*	**H2-5** Management Effectiveness Through Enhanced DSS George Sonnemann Nationwide Insurance *3*
HARDWARE Dick Lampman	**W1-5** Super Micros: Commodity Computer, Commodity Software John Stidd Molecular Computing, Inc. *F*	**W2-5** Videotex Systems Gary Arlen Arlen Communications, Inc. *A*	**PIONEER DAY** *HOWARD AIKEN AND THE HARVARD COMPUTATION LABORATORY* **W3-6** The Machines I. Bernard Cohen Harvard University *G*	**W4-5** The Laboratory & Aiken's Contribution Robert Ashenhurst University of Chicago *G*	**H1-5** New Developments in Array Processors Dr. Walter Karplus UCLA *G*	**H2-6** Multiprocessor Computer Designs Bob Patterson Intel *1*
TELECOMMUNICATIONS AND APPLICATIONS Randy Pilc Lorette Cameron	**W1-6** Special Applications of Technology Lorette L. Cameron Atlantic Richfield *J*	**W2-6** Network Services Planning John King DMW Group, Inc. *E*	**W3-7** Computers and the Law Dennis K. Knight Hitt, Hartwell & Knight *J*	**W4-6** Network Management Kiyoshi Maruyana IBM *3*	**H1-6** Creative Ideas for Systems Development and Measurement William E. Farley Lee College *3*	**H2-7** CAD/CAM David M. Herstad Arthur Andersen & Co. *G*
PERSONAL COMPUTERS Tom Fox Lance Leventhal	**W1-7** Software Transportability in the Personal Computer World Paul O'Grady Micro Focus *3*	**W2-7** The Next 5 Years in Microcomputers Paul Nesdore Datapro Research *F*		**W4-7** New Applications for Briefcase Computers Richard J. Matlack Infocorp *E*	**H1-7** Design of 68000-Based Microcomputer Systems Steven Puthuff Fortune Systems *1*	

PROFESSIONAL DEVELOPMENT SEMINARS Presented at the Hilton on the Park **Full-day sessions—9:00 a.m. to 4:30 p.m.** **Half-day sessions—9:00 a.m. to 12:00 noon or 1:30 p.m. to 4:30 p.m.**

WEDNESDAY May 18	Introduction to Computers: Everything You Need To Know, But Didn't Know Enough to Ask **(WA)** Dr. Marshall D. Abrams—*Computer Education, Inc.*, 9:00 a.m. to 4:30 p.m.	Disaster Recovery **(WB)** Robert P. Santis—*EDP Security*, 9:00 a.m. to 4:30 p.m.	Human Factors in Using Computer Systems **(WC)** Bruce Sanders—*Consultant*, 9:00 a.m. to 4:30 p.m.
	Designing the Computer Graphic Management Information System **(WD)** Irwin M. Jarett—*IMJ & Associates, Inc.*, 9:00 a.m. to 4:30 p.m.	Data Processing to IRM: Managing the Transition **(WE)** Daniel S. Appleton—*Appleton Co., Inc.*, 9:00 a.m. to 4:30 p.m.	
THURSDAY May 19	Letting Go of Stress **(RA)** Dr. Jackie Schwartz—*Schwartz & Associates* 9:00 a.m. to 12:00 noon	The Power of Silent Signals **(RB)** Maxine McIntyre—*Consultant*, 9:00 a.m. to 12:00 noon	Project Management **(RC)** Linda T. Taylor—*Gaskell & Taylor*, 9:00 a.m to 4:30 p.m.
	Synergistic Management **(RD)** Warren "Jack" Simpson—*Office of Personnel Management*, 9:00 a.m. to 12:00 noon	Shortest Distance to Improved Productivity is a Circle—A Quality Circle **(RE)** J. Michael Donovan—*Productivity Development Systems*, 9:00 a.m. to 4:30 p.m.	

It's Not Known as a Software Show, But . . .

By Lois Paul
CW Staff

ANAHEIM, Calif. — Although the National Computer Conference is not known as a software show, a large variety of software products for mainframes, minicomputers and microcomputers will be on display.

They are primarily products that are already available or recently introduced. In many cases, hands-on demos will be available so potential users can see the software in action.

United Software Systems and Services Corp. (U3S) is using NCC as a vehicle for the debut of Clio, a data base management system (DBMS) for IBM and plug-compatible mainframes running under DOS, OS and VM/CMS. At Booth 7904, you can learn more about Clio, which reportedly includes a virtual space architecture designed to provide an infinite and logical view of data and permits specification of a variety of data relationships, including hierarchical, network, relational, inverted files and qualifiers.

Other DBMS that will be on display include Mathematica Products Group, Inc.'s Ramis II, which will be featured in Booth P7432. Oracle Corp. will show its Oracle DBMS for IBM VM/CMS systems and Digital Equipment Corp. and Data General Corp. minis, as well as a version for Motorola, Inc. 68000-based micros, at Booth 2232.

Cincom Systems, Inc. will exhibit its line of data base/data communications and applications products and services at Booth P7852. A highlight will be product demos of TIS, its integrated data base technology; Mantis, its on-line fourth-generation application development system; and MRPS, its manufacturing resource planning system.

Cullinet Software, Inc. will discuss its recently announced products. These include IDMS/R, a version of its IDMS DBMS that reportedly combines network and relational architectures; the Information Database, a mainframe-based information data base intended to provide access to mainframe data for IBM Personal Computer users; and the Cullinet Personal Computer System, a data-base-driven applications software system for the IBM Personal Computer.

Spreadsheets and Tools

At Booth W6530, SAS Institute, Inc. will display its recently announced FScalc spreadsheet, a new procedure in its SAS/Full Screen Product, and SAS/Operations Research, a tool for business planning and scheduling which offers procedures for linear programming and critical path methods, among other functions. Both products run on IBM and plug-compatible mainframes.

Application software on display at NCC will include McCormack & Dodge Corp.'s complete line of financial applications packages, including offerings for accounts payable, general ledger and human resource management systems. The firm also will be displaying Version 2.0 of its Hilite query system.

Micro-Mainframe Link

Management Science America, Inc. plans to display its microcomputer-mainframe interface, which is designed to enable users of its financial applications software to download data that can be analyzed on the personal computer level using products from the firm's subsidiary, Peachtree Software.

Battelle Columbus Labs will display its Basis text/numeric retrieval softwareat Booth S5576.

In the microcomputer arena, Holland Automation will show its Sales Order Processing module for IBM's Personal Computer and Digital Research, Inc. CP/M-based systems at Booths P7406 and P7408. Micro Data Base Systems, Inc. will be at NCC to display its MDBS III DBMS and related products.

Reston Publishing Co., at Booth D0512, will demonstrate its Professional Applications Systems Software, a series of application development aids designed to be implemented on the IBM Personal Computer in conjunction with Lotus Development Corp.'s 1-2-3 spreadsheet, graphics and DBMS.

Don't Expect Introductions Of New Systems at NCC

By Ed Scannell
CW Staff

ANAHEIM, Calif. — With mainframe and minicomputer manufacturers' proclivity of the last two or three years for unveiling new products just before the National Computer Conference show instead of at the show itself, NCC has become the industry's biggest showroom for recently introduced rather than new products. This year's show will certainly continue that trend when it opens here next Monday.

The preannounced minicomputer expected to attract the most floor traffic is IBM's System/38 Model 8. Capable of supporting 60% more terminals than its predecessors in the System/38 family, the Model 8 holds up to 8M bytes internally and can attach as many as eight 3370 drives, allowing it to store 4.95G bytes externally.

Conspicuous by its absence, however, will be Big Blue's latest version of the Series/1. The Model 4596, which figures to play a key role in the company's networking plans as an intelligent cluster controller, is supposedly 20% faster than a similarly configured Series/1 Model 4955 Model F.

Another already announced supermini bound to attract its share of floorwalkers is Data General Corp.'s MV/10000 system. Benchmarked at twice the speed of IBM's 4341 Group 12 mainframe and Digital Equipment Corp.'s VAX-11/780 supermini, the virtual memory system supports up to 192 terminals and is software-compatible with all DG's 32-bit and 16-bit minis.

Harris Corp. is a third minicomputer maker that will have a recently announced system on display. Intended for both general business and scientific and engineering applications, its H700 reportedly has 75% to 80% of the processing speed of DEC's VAX-11/780 but costs $60,000 to $75,000 less. Harris will also be demonstrating a ruggedized 300 system for military applications.

Telefile Computer Products, Inc.'s T85LVM, a 32-bit virtual memory system, will be demonstrated publicly for the first time in Booth W6234. Built using large-scale integration microprocessor technology, the system runs under the TCP-V/LM operating system. The operating system permits data processing functions to be conducted in five concurrent modes of operation including multiprogrammed local batch, remote batch processing, time-sharing, transaction and real-time processing.

The SEL Computer Systems Division of Gould, Inc. plans to introduce a compatible family of computers two days before the show. The line will range from a small desktop unit to a large mainframe.

A company spokesman said the systems will be demonstrated at the show functioning in three basic business environments — administration/financial/word processing; engineering/computer-aided design and manufacturing; and manufacturing-production/distribution.

NCR to Extend 8600 Line

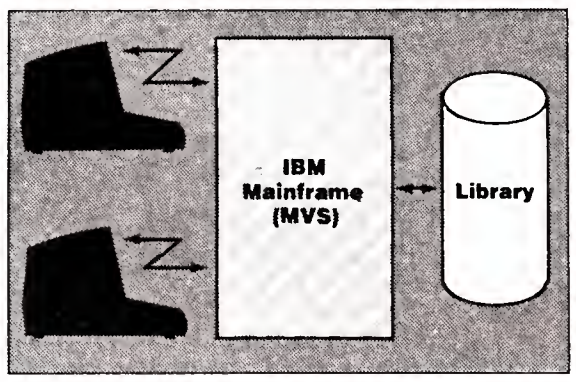
NCR Corp. plans to introduce seven new members to its 8600 family of mainframes on Monday, the first day of the show. While the new systems will not be present at the show, a spokesman for the company said NCR will have consoles and terminals at its booth to demonstrate the systems' capabilities remotely.

The company will also be exhibiting its breadbox-size 9300 mainframe that contains the company's proprietary 32-bit chip set. The entry-level price of the system is $24,235.

Of the remaining major mini makers, Prime Computer, Inc. decided not to attend this year's show, claiming its money could be better spent at other shows. DEC will be at NCC '83, but that vendor has not come out with a new system since last fall's VAX-11/782 introduction.

Likewise, the majority of IBM plug-compatible manufacturers either have been caught on the downside of their product cycles by this year's show — Amdahl Corp., for example — or, like IPL Systems, Inc. and Cambex Corp., have decided to pass it up entirely in favor of competing shows.

Wang word processors can now communicate with their IBM mainframe, without losing a word.



It used to be that storing documents on the mainframe was no easy task for Wang word processors. Literal transmission of characters was accomplished, but document format and administrative information was lost.

Soft-Switch™ has changed all that.

Soft-Switch is a distributed software product developed by Integrated Technologies, Inc. to expand the capabilities of document routing and archiving. With Soft-Switch, Wang OIS, VS and WPS word processors can now archive documents on the mainframe—totally intact, down to the number of key strokes—and index them as you like (e.g. keyword, author, date). These documents can then be transmitted to other Wang stations, or even IBM or NBI stations, using ITI's extensive edit level translation capabilities. This is done using Soft-Switch's store-and-forward mode—utilizing an IBM (or compatible) mainframe with the MVS operating system. This means that no communication is necessary between the WP operators—the recipient receives the document directly from the mainframe. And only one routing instruction is necessary, regardless of the number of destinations—within one office, across the country, or around the world.

For more information about Soft-Switch, call or write.

iti **Integrated Technologies, Inc.**

200 North Warner Road
King of Prussia, PA 19406
(215) 768-9330 TELEX: 469600

Presenting the Premier Performance of Esprit

Systems, Inc.
Hazeltine Terminals Division



Market Action Heating Up

Big Names in PBXs Expected to Showcase Wares

By Bruce Hoard
CW Staff

ANAHEIM, Calif. — Stroll around the National Computer Conference floor here next week and you won't have to wait very long between communications vendors' booths, booths that will beckon attendees with everything from typewriter ribbons to digital private branch exchanges (PBX).

Right now, PBXs are the darlings of the communications world, and they are frequently lumped into the burgeoning office automation market. No matter, competition among vendors is heating up, and all the big names should be here.

Rolm Corp.'s CBX and Northern Telecom, Inc.'s SL-1 are the big names that come to mind most quickly when the topic is PBXs.

The two companies have been slugging it out for superiority in the still-nascent PBX market by signing various licensing and development agreements with the likes of Digital Equipment Corp., Hewlett Packard Co. and Data General Corp.

Of course, American Bell, Inc., the newly created and fully owned subsidiary of AT&T, will be at NCC with its recently introduced Dimension 85 digital PBX.

Unfortunately, the newest and hottest name on the lips of PBX afficionados — Ztel, Inc. — will be absent from NCC. Ztel and its highly touted Private Network Exchange (PNX) have chosen to forego one Anaheim show in favor of another. The PNX will have its first public demonstration at the International Communications Association conference here May 30-June 2.

What to Expect From IBM

IBM can be expected to showcase the 3725 communications controller, its long-awaited and recently unveiled successor to the 3705 front-end processor.

On the satellite side, the trend toward this high-speed alternative to earthbound communications should be well documented by an assortment of vendors.

Of particular interest is the evolving relationship between IBM and Satellite Business Systems (SBS).

SBS is jointly owned by IBM, Aetna Life & Casualty Co. and Comsat General Corp.

If a recent petition it submitted to the Federal Communications Commission is approved, SBS would no longer be restrained from selling or promoting data processing gear or services from IBM, a move that would allow the two firms to pursue any number of lucrative projects.

AT&T's Enticements

AT&T has been moving slowly but surely toward an all-digital, nationwide network that would replace the antiquated analog version now in place.

It recently started transmitting voice and data over a fiber-optic cable link running between Boston and Washington, D.C. Expect Bell to tempt you with the wonders of fiber-optic cable.

Modem and multiplexer manufacturers will also be well represented at NCC.

Codex Corp., Racal Milgo, Inc. and Paradyne Corp. are just a few of the many expected to be displaying their wares.

MCI Communications Corp., which is currently laying fiber-optic cable up and down the East Coast and has announced plans to buy 24 voice and data transponders on two Hughes Aircraft Co. communications satellites, will not be at NCC.

Companies that would like to be here but ended up on the waiting list include Fibronics, which recently introduced a coaxial cable/fiber-optic multiplexer, and Avanti Communications Corp., which recently introduced a time-division multiplexer said to mix voice, data and video at speeds up to 10M bit/sec.

Where Does OA Begin? And End? NCC '83 to Cloud the Issue Even More

By Bruce Hoard
CW Staff

ANAHEIM, Calif. — Any lingering doubts you might have about the arrival of office automation should be dispelled at the National Computer Conference.

However, figuring out just where office automation begins and where it ends could prove to be a thorny task.

If you think word processing is office automation (few people would argue to the contrary), NCC will confirm your thoughts.

If you think management workstations are office automation (of course, it's getting a little difficult to tell a management workstation from a personal computer), vendors at NCC will agree.

Local-area networks (wait a second — broadband, baseband or fiber optic?) will also be an abundant presence on the exhibit floor. Lots of vendors will call them office automation.

And so on. Chances are no matter what you call office automation, it will be under the NCC big top in one guise or another.

'Straight' Word Processing

So let's start with word processing. At this point, it's getting harder and harder to find straight word processing. Most vendors want you to think that for a few dollars more, you can have word processing and information processing.

Industry leaders like Wang Laboratories, Inc.; Lanier Business Products, Inc.; CPT Corp.; and NBI, Inc. will all be showing their latest wares. NBI in particular will be boosting its recently introduced 4000 and 4000S systems.

Apple Computer, Inc.'s Lisa will probably be the star of the management workstation show, inheriting that distinction from another Star, the Xerox Corp. 8010, which drew huge crowds at NCC '81 in Chicago. Lisa, priced at $10,000, uses a mouse like the 8010 and offers many of the same screen capabilities.

Grid Systems Corp. and Fortune Systems Corp. will also be touting their products, each of which could be best described as on the periphery of the management workstation scene. The Grid Compass is more a portable computer and the Fortune 32:16 more a personal computer. Fortune is introducing an updated operating and word processing system.

There will certainly be no shortage of local-area networks — baseband, broadband or otherwise. Like most high-tech terms, "local-area network" is being stretched every conceivable way to match the marketing spiels of the vendors, who would have you think they have the real thing.

'Old Guard' to Show

The old guard — the Wangnets, Ethernets and Localnets — will also be in Anaheim next week. Xerox will be showing its new Shared Interface Unit, which connects two 820-II personal computers to Ethernet. The proliferation of local nets designed for proprietary and personal computer use will also be in evidence. Applenet and Decision Net/Omninet from NCR Corp. are good examples.

Digital Microsystems, Inc.'s Hinet still fits the proprietary/personal computer category, but the company recently announced it has complemented those capabilities by adding multiple gateways to such mainframe manufacturers as IBM and Sperry Corp.

Infotron Systems Corp. has also joined the local net fray and will be featuring its Infotron Local-Area Network.

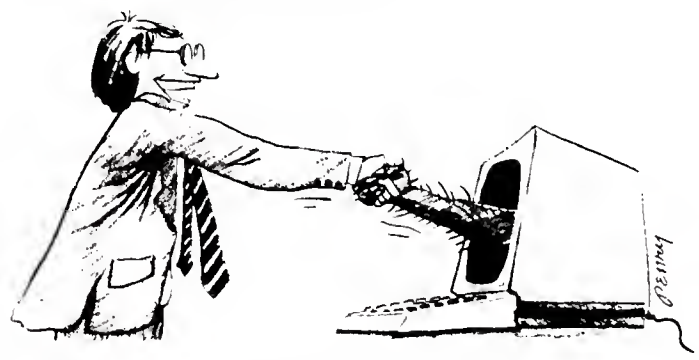
And oh yes, IBM. The primary purveyor of mainframe-driven office automation will be here, Charlie Chaplin clone and all, presumably.

But despite strident claims from some quarters, don't count on the computer titan to unveil a local-area network.

NCC is no longer the springboard for product debuts it once was.

DEC and VAX/VMS are registered trademarks of Digital Equipment Corporation. UNIX is a registered trademark of Bell Laboratories.

Using VAX/VMS, or UNIX?



We make the user friendlier.

When your "user-friendly" software is acting beastly, you have to work harder to be nice to it. ERI™ Training can show you how to work *with* the system instead of around it. In short, we make the user *friendlier*.

ERI custom tailors on-site courses to our clients' individual needs for VAX/VMS,® UNIX® and other DEC® and DEC compatible software. What is more, we do it for less. In fact, 35% less than your alternatives.

Contact ERI at 212 956 5988 for a friendly, informative chat. ERI: the independent training resource that talks candidly and objectively. *Afterall*, what are friends for?

See us at Booth No. 405 **DEXPO** *St. Louis, May 22-24, 1983*

ERI™ *Enhanced Productivity Through Training™*

Essential Resources Inc. 310 Madison Avenue/Suite 1810, New York, New York 10017

Act 1

The Executive 10/78.

A grand act.

The Executive 10/78 is a fully featured, ergonomically designed alternative to your IBM 3278 terminals that can save you more than a grand on each terminal you buy. With an external protocol convertor, its familiar 3278 keyboard layout, status line and 80-character by 24-line display enables it to run IBM 3278 applications without software changes.

A distinct advantage is its ergonomic design. A tilt and swivel display, a glare-free screen with comfortable green phosphor, non-reflective surfaces and a low-profile, contoured keyboard that meets DIN standard.

It's a class act, with a price that will have you on your feet and applauding.

Esprit Systems, Inc.
Hazeltine Terminals Division



See us at NCC, Booth W6288

or call us:
CALIFORNIA
(415) 341-4656, (415) 591-0118
ILLINOIS, (312) 986-1414
NEW YORK, (201) 876-4121
or TOLL FREE, (800) 645-4508

For NCC Attendees

Companies Offering Behind-the-Scenes Tours

By Liane Lucietta
Special to CW‡

ANAHEIM, Calif. — Companies from across the U.S. will be represented at next week's National Computer Conference. Several of the "home-team" companies close to the convention center in Orange County are opening their doors to NCC attendees for behind-the-scenes tours of their facilities.

Most tours are by appointment and can be scheduled either by calling the firm directly or by visiting the company's booth at NCC.

Archive Corp. manufactures ¼-in. streaming cartridge tape drives. Stop by Booth D2215 to make tour arrangements or call Linda Credit, marketing service specialist, or Loren Stone at (714) 641-0279. Archive is at 3540 Cadillac Ave., Costa Mesa. From convention center: south on Harbor Blvd., right on Sunflower; Sunflower ends and curves into Cadillac.

Bytronix Corp. makes a line of processors ranging from the top of the micro line up to supermicros. Tours are available by appointment; stop by Booth S5572 or call Norman Clark, president, or Jan Fontes, administrative assistant, at (714) 871-8763. Maps to the Bytronix manufacturing plant, which is located at 1620 Orangethorpe Way, Anaheim, are available at the booth.

California Computer Products, Inc. (Calcomp) manufactures a broad line of computer graphics, including graphics displays, plotters, digitizers and turnkey computer-aided design and manufacturing systems. Tours available by appointment; contact Marietta Schoenherz at Booth N3838 or call Laura Bonilla at (714) 821-2011. Calcomp is at 2411 W. La Palma Ave., Anaheim. From convention center: north on Santa Ana Freeway (5), exit on La Palma, left on La Palma, right on Gilbert (a side street); facility is at the end of the street on the left.

Computer Automation's Naked Mini Division is an OEM manufacturer of products ranging from board-level microcomputers to large-scale minicomputers. Tours are available by appointment. Contact Arlene Chmielewski at Booth S5340 or call (714) 833-8830. Computer Automation is at 18651 Von Karman Ave., Irvine. From convention center: south on the San Diego Freeway (405) to Jamboree Blvd., right on Jamboree to Michelson Drive, right on Michelson to Von Karmen and turn right.

Emerson Electric Co. manufactures ac inverters and uninterruptible power supplies. Tours are available by appointment. Contact Sandra E. Bell, advertising coordinator, at Booth N4067-68 or call Mary Heath at (714) 545-5581. Emerson Electric is at 3300 S. Standard St., Santa Ana. From convention center: south on the Santa Ana Freeway (5); take Newport Freeway (55) toward Newport; exit on MacArthur Blvd. and turn right; right on Main, right on Alson, then right on Standard St., which will dead-end into parking lot.

Emulex Corp. manufactures disk and tape controllers for Digital Equipment Corp. computers. A shuttle will operate from the convention center to the plant for tours. Contact Joni Danks at Booth A3100 or call (714) 540-4346. Emulex is at 2001 E. Deere Av., Santa Ana. From convention center: Santa Ana Freeway (5) south to the Newport Freeway (55); south on the Newport Freeway to Dyer Road; Dyer Road east to Red Hill Ave.; right on Red Hill to Deere and turn right.

General Terminal Corp. manufactures CRT terminals. Open house and tours available by appointment. Contact Dottie Frye, administrative assistant, at Booth W6545-46 or call Kim Day, marketing secretary, at (714) 730-0123. General Terminal is at 14831 Franklin Ave., Tustin. From convention center: south on the Santa Ana Freeway (5); exit on Redhill and turn right; left on Walnut; right on Franklin.

Holland Automation U.S.A., Inc. is an international company that designs, manufactures and sells business application software for microcomputers. Open house and tours available by appointment. Contact Alan Routledge, president, at Booth P7406 or call Diana Piet at (714) 641-2844. Holland Automation is at 3400-D MacArthur Blvd., Santa Ana. From convention center: south on Harbor Blvd. for about seven miles (pass under the Garden Grove Freeway); left on MacArthur Blvd. Facility is on the right near the railroad tracks.

Juki Industries of America, Inc. manufactures line printers, dot matrix printers and ball element typewriters. Contact Naoharu Ochai or Paul Rooney, western regional sales manager, or Dorothy Fullum, advertising manager, at Booth W6278 for tours.

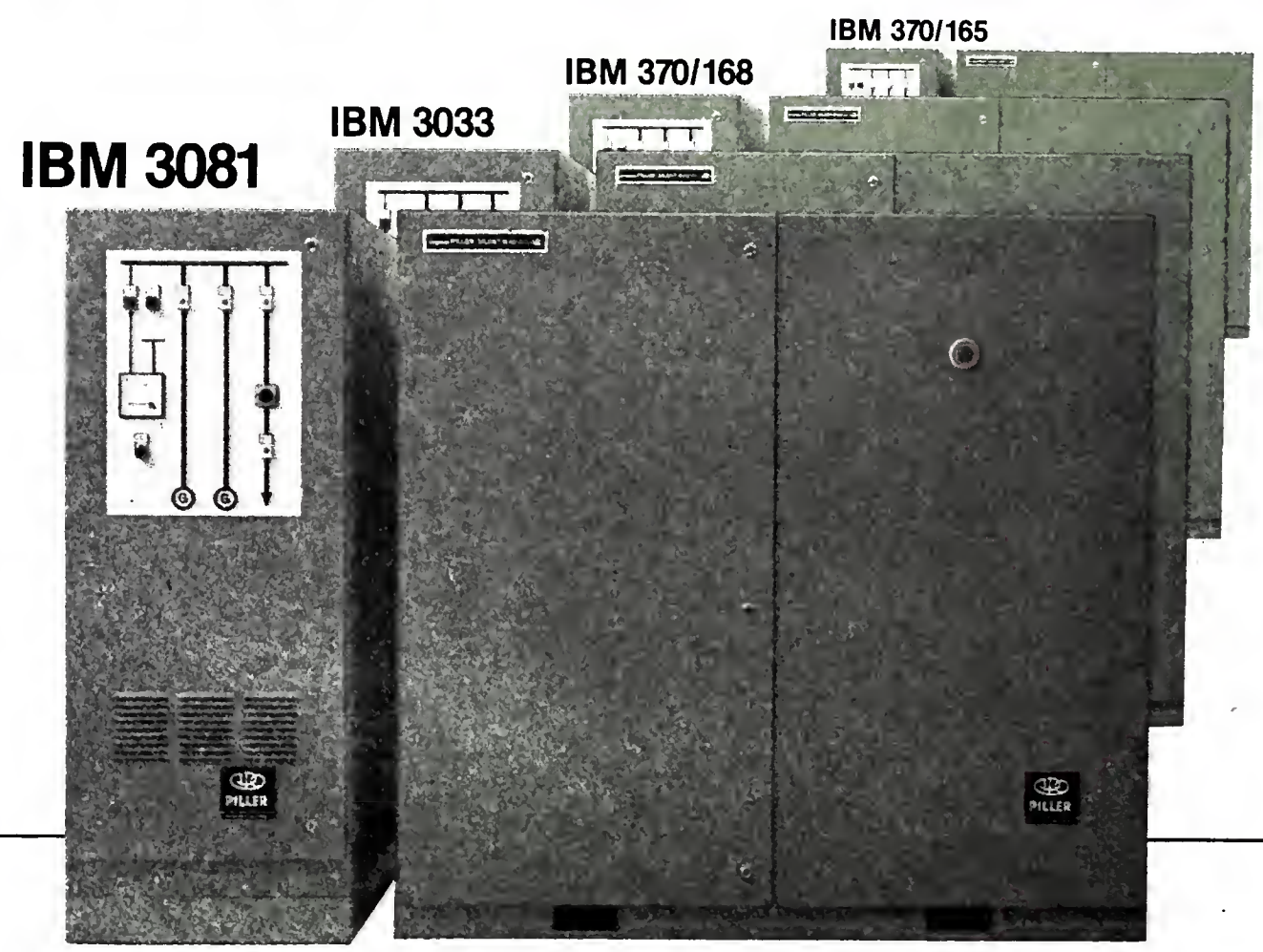
Lear Siegler, Inc. manufactures CRT terminals and serial dot matrix printers. Tours available by appointment. Contact Kathy Raftery, director of marketing, at Booth S5140 or Ron Harcarik, manager of marketing communications, at (714) 774-1010. The Lear Siegler manufacturing facility is at 901 E. Ball Road. From convention center: north on Harbor Blvd., right on Ball Road. Plant is on the left before State College Blvd.

Macrolink designs and manufactures Perkin-Elmer Corp. add-in products including communications interfaces, peripheral controllers and memory. For tours, contact Bill Goodale, vice-president, at Booth P7142 or Diane Sojka at (714) 634-8080. Macrolink is at 1150 E. Stanford Court, Anaheim. From convention center: east on Katella Ave., south on State College Blvd., right on Orangewood Ave., right on Santa Cruz. Continue to Stanford Court. Maps available at the booth.

(Continued on Preview/16)

PILLER

POWER SYSTEMS FOR COMPUTERS



Then and today...
PILLER IS STILL NO. 1

Announcing the **PILLER 40 KVA** power system for **IBM system 3081***...the only 40 KVA power system that meets IBM specifications—and—incorporates PILLER's exclusive paralleling design.

This permits redundant operation of two or more **PILLER 40 KVA** Frequency Converters to support single or multiple **3081 CPU's**, expandable on a modular basis.

And as usual, the **PILLER 40 KVA** Frequency Converters offer a number of other exclusive advantages not currently available in other power units...including dual input voltage capability (either 208V or 460V input)...and a special startup system which reduces surge demands to half those of other frequency converters.

*Also meets specifications for **AMDAHL System 580.**

All this at a cost that is competitive with the IBM Model 3089 power unit.

Today, as then, PILLER offers more 60 Hz Motor Generator and 415 Hz Frequency Converter models than any other manufacturer, plus a full range of paralleling, power distribution and control equipment required for total power system integration.

No wonder **PILLER** remains the **NO. 1 CHOICE** in power protection for IBM CPU's, with more than 3,000 systems installed coast-to-coast.

Like to know more? Contact Murray Lazar, Director of Marketing. (914) 355-6741.

KW® CONTROL SYSTEMS, INC.
South Plank Road. Middletown. New York 10940
Phone (914) 355-6741 TELEX No. 13-7428

Act 2

The Executive 10/51.

A fantastic finale.

The Executive 10/51 continues the plot, delivering a fully featured IBM 5251 replacement for the price of an ASCII terminal. With an external protocol convertor it is compatible to IBM System 34 and System 38 terminal requirements. It even has the same keyboard layout, runs all IBM applications and displays the 5251 status line with an 80-character by 24-line screen format.

But again, it's ergonomically designed, with tilt and swivel, non-glare screen and green phosphor. And the final point, it's economical. Better than a thousand dollars less than the terminal it replaces.

You'll be so excited, you'll be screaming for an encore!

Esprit Systems, Inc.
Hazeltine Terminals Division



See us at NCC, Booth W6288

or call us:
CALIFORNIA
(415) 341-4656, (415) 591-0118
ILLINOIS, (312) 986-1414
NEW YORK, (201) 876-4121
or TOLL FREE, (800) 645-4508



Firms Near NCC Offering Tours

(Continued from Preview/14)

Micro Technology, Inc. manufactures floppy disk and Winchester disk controllers and subsystems. Open house, tours available by contacting Mike Jacobs, vice-president of sales and marketing, at Booth D2005-7 or Tish Hicksted, office manager, at (714) 632-7580. Micro Technology is at 1620 Miraloma Ave., Placentia. From convention center: west on the Newport/Costa Mesa Freeway (55); north on the Pomona Freeway (57); take Riverside Freeway (91); take Tustin exit north, go right on La Palma, left on Van Buren and right on Miraloma.

Orange Micro, Inc. specializes in personal computers which are sold through distributors, like Apple Computer, Inc. printer interface products. Its local retail store is open for visits. Contact Steve King at Booth P7734-7738 or Don Hambly at the Orange Micro Printer Store at 3150 E. La Palma, Suite I. From convention center: north on Pomona Freeway (57) toward Riverside; east on Riverside Freeway (91); take Kramer exit and turn left; go right on La Palma.

Pertec Computer Corp. manufactures a full line of single-user and multiuser business systems and software. Tours by appointment; contact Soron Litman, vice-president of marketing programs, at Booth N3848 or Janet Canavan, administrative assistant, at (714) 540-8340. Pertec is at 17112 Armstrong Ave., Irvine. From convention center: south on San Diego Freeway (405); exit on Jamboree Road and turn left; go left on McGaw, then right on Armstrong.

Printronix, Inc. makes dot matrix line printers. Tours available by contacting Peter Craig, vice-president of international sales, or Don Hazelton, vice-president of domestic sales, at Booth W6188 or Ted Lorber, manager of product marketing, at (714) 549-7700. Printronix is at 17500 Cartwright Road, Irvine. From convention center: Santa Ana Freeway (5) to the Newport/Costa Mesa Freeway (55); go south on San Diego Freeway (405); exit on Jamboree and turn left; go left on Main, right on Cartwright. Facility is on a cul-de-sac.

Randomex Data Maintenance, Inc. markets disk pack cleaners and inspectors and offers nationwide on-site media maintenance service. For tours, contact Joseph M. Ludka II, vice-president, at Booth N4000-02 or call (213) 595-8301. Randomex is at 17500 Cartwright Road, Irvine. From convention center: north on the San Diego Freeway (405); exit in the City of Long Beach on Orange Ave. and turn left; turn right on Willow. The plant is about a half block from the corner on the left.

Soroc Technology, Inc. manufactures terminals and microcomputers. It will not be exhibiting at NCC, but will provide transportation for tours of its plant on 161 Freedom Ave. in Anaheim. To make arrangements, call Sherrie Priebe at (714) 992-2860.

Systems Group manufactures small business computers and the Business Express application development software system. The facility is open for drop-in tours or tours by appointment. Contact John Carver, president, at Booth P7107-09 or Geoffrey Willis, marketing manager, at (714) 633-4460. Systems Group is at 1601 W. Orangewood Ave. From convention center: south on Harbor Blvd.; left on Orangewood; go past Anaheim Stadium and the Orange Freeway (57). Facility is about one-quarter mile past the freeway on the left side.

Tecstor, Inc. manufactures Winchester fixed disk drives. Tours are available by appointment; see Joe Molina, director of marketing, At Booth P8146-P8148 or call (714) 842-0077. Tecstor, is located at 16161 Gothard St., Huntington Beach. From convention center: north on the Garden Grove Freeway (22) or the San Diego Freeway (405) to Beach Blvd., south on Beach to Edinger Ave., right on Edinger to Gothard St. and turn left.

Trendata/Standard Memories Corp. designs and manufactures a family of add-on memories for minis and micros. Group tours will be arranged and transportation provided. Contact Miles Efron at Booth P7818 or call (714) 540-3605.

Wespercorp Western Peripherals Division manufactures disk and tape controllers for Digital Equipment Corp., Data General Corp. and Perkin-Elmer Corp.systems. Plant tours are available. See personnel at booth P7246 or contact Bud Greenfield at (714) 730-6560, ext. 212. Western Peripherals is at 14321 Myford Road, Tustin. From convention center: south on the Santa Ana Freeway (5) to the Myford Road off-ramp, right on Myford.

Xerox Corp. Printing Systems Division manufactures hardware, software, accessories and supplies for electronic printing. Tutorials on the application of electronic printing in various industries will be conducted at Booth S5040 and at Disneyland Hotel. Information about tours available from Keith Davidson at booth S5040 or Paul Holtzman at (213) 615-6517.

Lucietta is a free-lance publicist, consultant and writer who lives in North Hollywood.

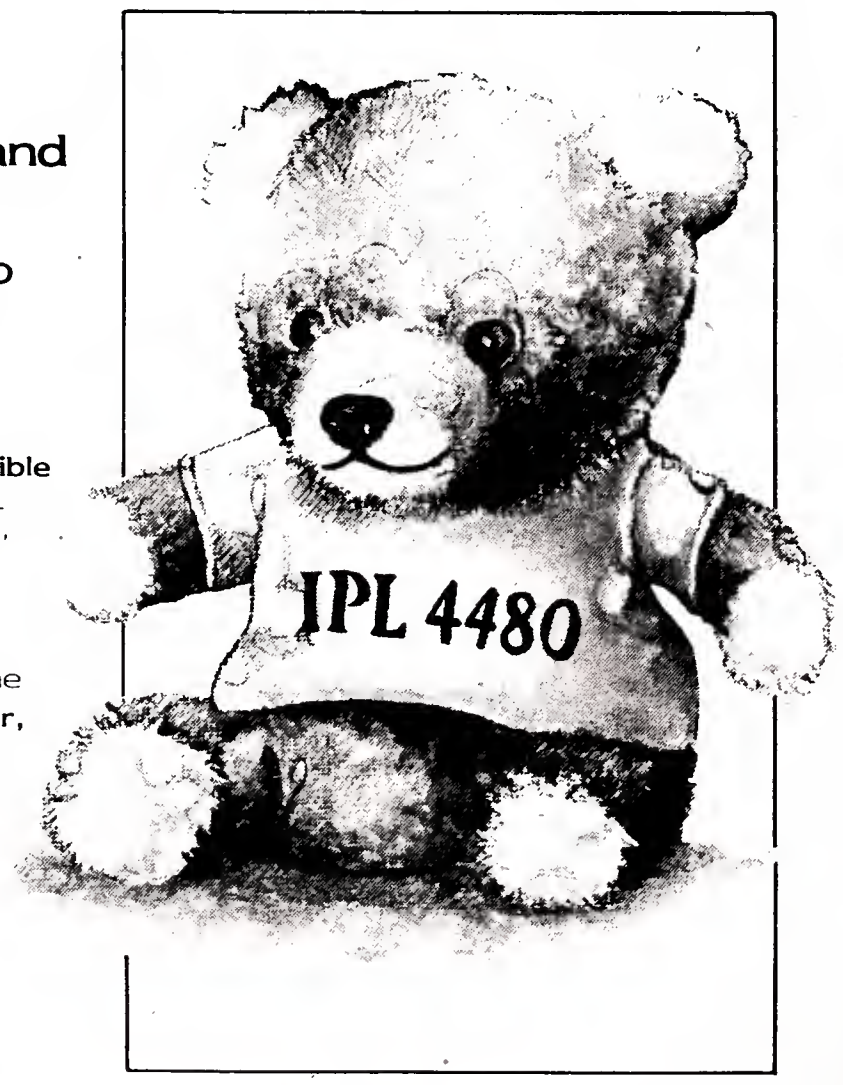
If IBM made a 4300 Computer...

- Fault-Tolerant
- More Powerful
- More Flexible
- More Serviceable, and
- Less Expensive

THEN IT WOULD BE AS GOOD A CHOICE AS THE IPL 4480 CONTINUOUS COMPATIBLE COMPUTER!

IPL's 4480 **Continuous Compatible Computer.** Bringing a new dimension in performance and "uptime" availability to IBM-compatible computers.

For more information about the **Continuous Compatible Computer,** contact Manager of Marketing Support at IPL Systems, Inc., 1370 Main Street, Waltham, Massachusetts 02254. 617-890-6620



ipl SYSTEMS INC.
Advancing Information Processing

Encore

The Esprit III COLOR.

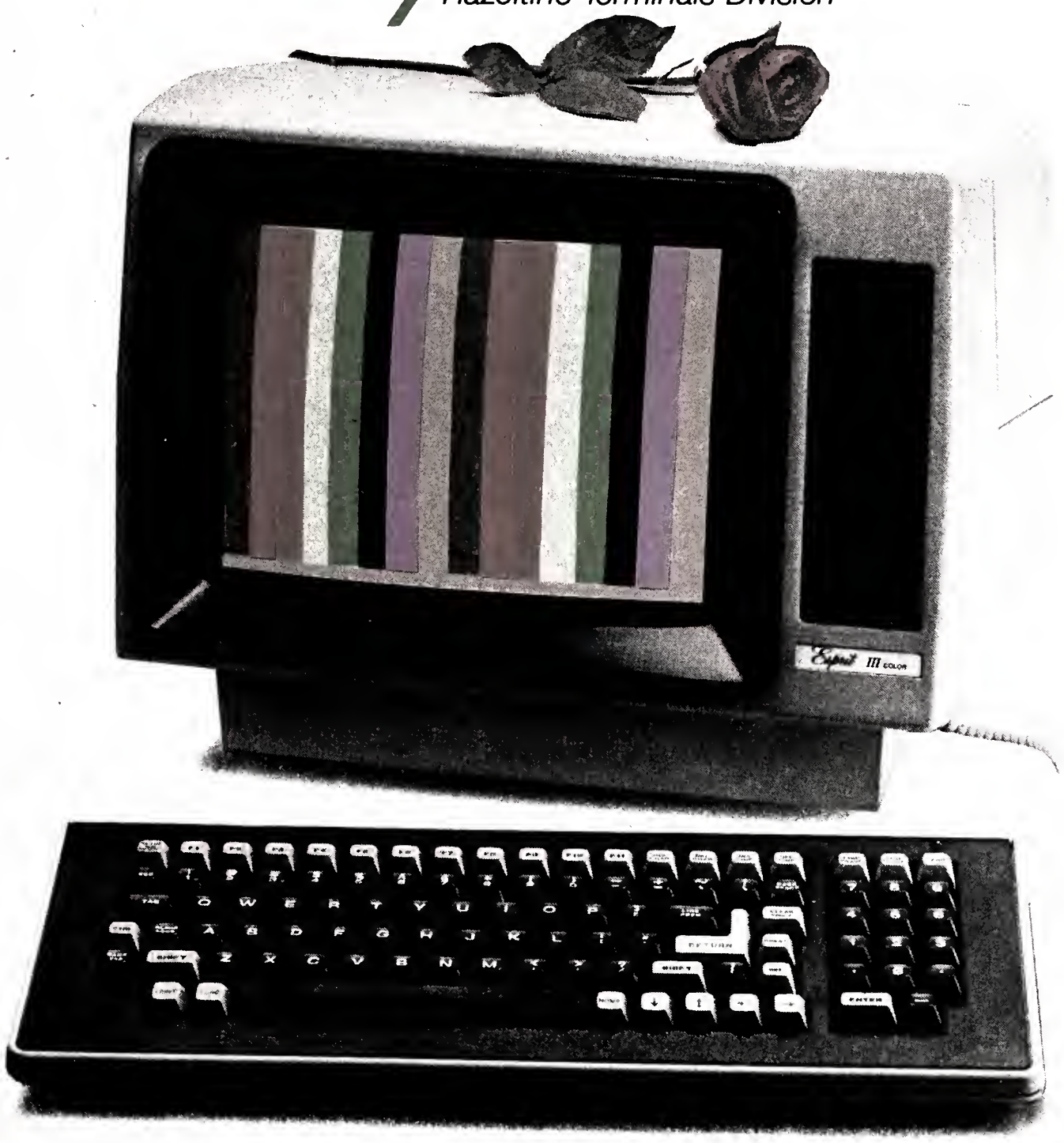
A colorful showstopper in business graphics.

To leave you smiling, we're also debuting a price breakthrough in color graphics. It's the newest member of the sensationally successful Esprit series—elegantly designed, fully featured, "smart" ASCII terminal that delivers the functional performance of both our popular Esprit III and the TVI 950. And it adds a full color display with line-drawing capability.

It features an oversized 13-inch display for easy viewing, non-glare screen and non-reflective surfaces, detached keyboard and function keys. Most important, it features a $995 price tag—much less than even less capable color terminals.

Order now, because it promises to be a sellout!

Esprit Systems, Inc.
Hazeltine Terminals Division



See us at NCC, Booth W6288

or call us:
CALIFORNIA
(415) 341-4656, (415) 591-0118
ILLINOIS, (312) 986-1414
NEW YORK, (201) 876-4121
or TOLL FREE, (800) 645-4508

Aiken Focus of Pioneer Day; Hopper to Keynote

By Marguerite Zientara
CW Staff

ANAHEIM, Calif. — The seminal machine development work of Howard Hathaway Aiken (1900-1973) and his colleagues at the Harvard Computation Laboratory 40 years ago will be the focus of this year's Pioneer Day activities at the National Computer Conference on Wednesday, May 18.

If it hadn't been for Aiken, IBM might be just another office products maker today. In the late 1930s, Aiken's search for funding for the development and manufacturing of a super calculating machine led him to IBM Chief Executive Officer Thomas J. Watson Sr., a great believer in the potential of science and technology.

Each day of the National Computer Conference, the story of machine developments and of other facets of Howard Hathaway Aiken's work will be illustrated by a slide show given in a room just off the south lobby of the Anaheim Convention Center.

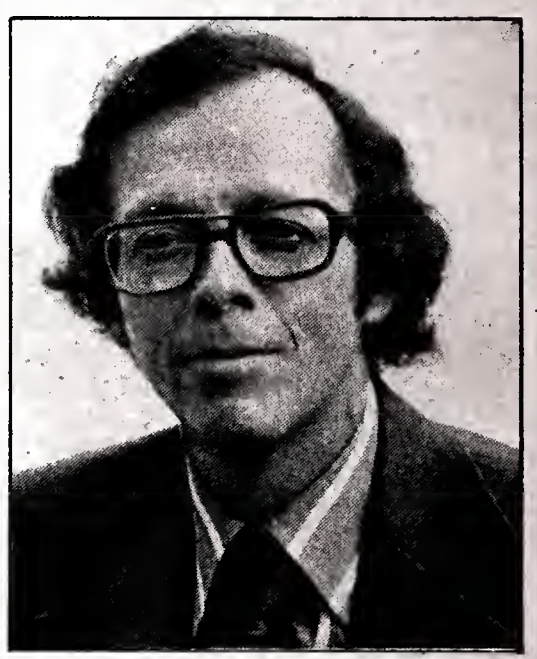
With $500,000 donated by Watson for development work, Aiken faced another potential obstacle with the outbreak of World War II. The war threatened to stop his calculator project before it began, but the Navy — in which Aiken was a lieutenant — realized the value of such a device for solving naval problems. Aiken was released on detachment in 1939 to complete the work.

Five years later, in 1944, the room-size Automatic Sequence Controlled Calculator — which is more familiarly known as Mark I — was unveiled. The device was the first in a series of four large-scale computing machines, the Mark I, II, III and IV. While Mark I was electromechanical, Mark IV boasted a large drum store, diode logic and magnetic core shift registers.

Opening the Pioneer Day session, "Howard Aiken and the Harvard Computation Laboratory: The Machines," will be a keynote address by another computing pioneer, Capt. Grace Murray Hopper of the U.S. Naval Reserve. Hopper was one of the first to learn how to program Aiken's Mark I computer and did applications programming for the Mark I, II and III.

The evolution of computer technology during the development and operation of the four large-scale computing machines will be discussed by Richard Bloch, president of R.M. Bloch Associates; John Harr, education consultant at Bell Laboratories, Inc.; and Peter Strong, one of Aiken's Harvard colleagues, now retired. The panel will trace the technological paths from electromechanical to magnetic and solid-state and from straight machine language coding to early attempts to permit programming directly in algebraic notation.

Panel to Feature Colleagues Of Aiken



Robert L. Ashenhurst

By Marguerite Zientara
CW Staff

ANAHEIM, Calif. — Computer Pioneer Howard Aiken, who oversaw the development of four large-scale computing machines at the Harvard Computation Laboratory in the 1940s, was above all a man of "vision and perspective," according to Robert L. Ashenhurst, professor of Applied Mathematics at the University of Chicago's Graduate School of Business.

As session leader here next week for "Howard Aiken and the Harvard Computation Laboratory: The Laboratory and Aiken's Contribution," one of the two sessions comprising the National Computer Conference's Pioneer Day on Wednesday, May 18, Ashenhurst will head a panel of Aiken's distinguished former colleagues.

Formal presentations will be made by Frederick Brooks Jr. of the University of North Carolina, who worked with IBM on the design of the 360 series, and by Kenneth Iver-

(Continued on Preview/22)

WE JUST TOOK THE GREY AREA OUT OF CHOOSING A COLOR GRAPHICS SYSTEM.



$7,995

$5,995

Our fourth successful year in color graphics has left us well in the black again. So, just like last year, we're putting you back in the green again.

Now you can get the AED 512 and 767 terminals with 30-day delivery at these unheard-of-prices.

Both terminals feature the full-color, high-quality graphics capabilities you've come to know us for. For CAD/CAM, VLSI design, process control, business graphics, mechanical design and much, much more.

They're also fully backed by a host of the most powerful software packages in color graphics. Packages like DI-3000, GRAFMAKER, PDA/PATRAN-G, EDMS, and CAESAR, just to name a few.

Look at our specs and look at our prices. It's the only time you'll see a combination like it anywhere, anytime.

Call us now to place your orders.

Because waiting for a better offer on full-capability, full-color graphics terminals will only get you old and grey.

$5,995 without monitor	$3,995 without monitor
Anti-alaising eliminates the "jaggies" typical of raster graphics	Full screen transfers at ½ second/picture via direct video memory access port
1024 x 1024 x 8 virtual address space, up to 768 x 575 pixel window	512 x 512 pixels x 8 planes
Broadcast TV adaptable	Broadcast TV adaptable
High resolution 13" or 19" monitors display 16.8 million color palette with 256 simultaneous colors	High resolution 13" or 19" monitors display 16.8 million color palette with 256 simultaneous colors
Available as table-top or rack-mountable	Available as table-top or rack-mountable
Continuous joystick panning & zoom	Continous joystick panning & zoom

ADVANCED ELECTRONICS DESIGN, INC.

440 Potrero Ave., Sunnyvale, CA 94086, (408) 733-3555, Telex 357-498, Outside California (800) 538-1730

DI-3000 & GRAFMAKER are trademarks of Precision Visual Inc. PDA/PATRAN-G is a trademark of PDA Engineering. EDMS is a trademark of [illegible]. CAESAR is a trademark of U.C. Berkeley.

"We use Graham's Epoch 480 exclusively; quality-related problems are virtually zero."

What data processing experts are looking for — at least those we talk to (and we survey them regularly) — is no headaches.

So some, like the one quoted above, use Graham Epoch 480 for everything, not just for important applications like archival storage and data transfer. Their position is, how can you put a price tag on peace of mind?

Epoch 480 delivers, because its binder system is as tough as they come. It minimizes head wear and tape debris and provides sharper signal output. It has earned Graham Magnetics the reputation around the world of being the tape company.

We do it by making good tape, and listening to the experts. Our customers.



Talk to the Media Management Specialist at Graham Magnetics The tape company.

See you at NCC, booth numbers S 5607-5608.

GRAHAM MAGNETICS

Toll Free: 1-800-433 7632, 433 7633 In Texas: (817) 281 9450

CARLISLE

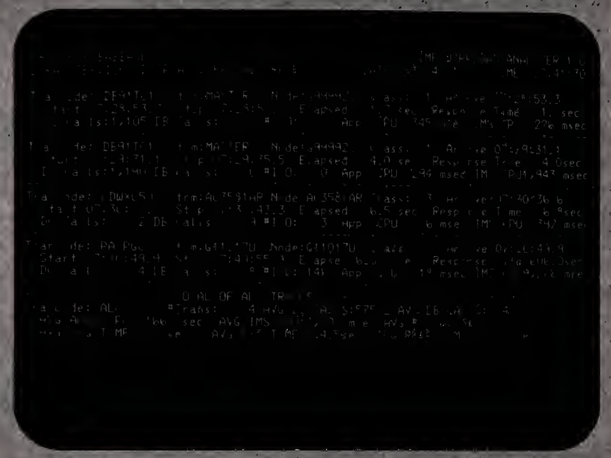
SCREEN OUT IMS PROBLEMS.

"IMF lets us solve them so quickly, our users never see them."

Keith Stone, Data Base Manager and Wally Morgan, Data Base Specialist—
responsible for IMS data base/data communications service at a Southern U.S. data center



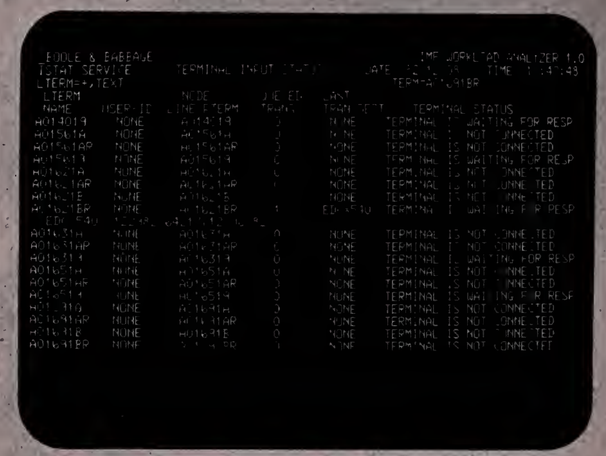
"With Boole & Babbage's IMS MANAGEMENT FACILITIES (IMF)," we can concentrate on solving problems quickly, instead of guessing where they might be. When you're responsible for providing IMS service to 600 terminal users, like we are, that's really important."



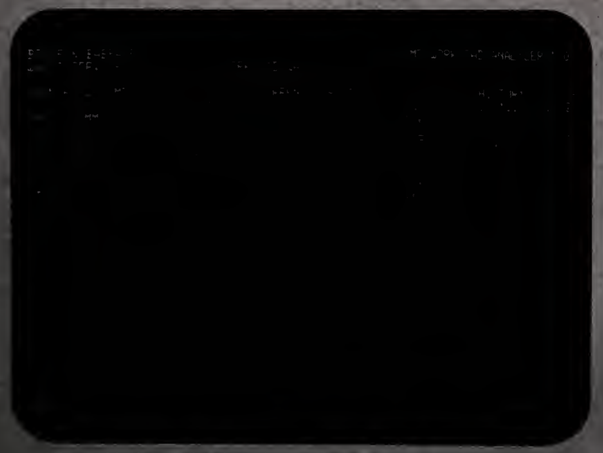
"About a month ago, we had a transaction which appeared to go into a loop and then abend. IMF/TRANSACTION TRACE showed only 8 data base calls, but one resulted in over 14,000 data base I/O's. We spotted this without inducing the overhead of DC MONITOR."



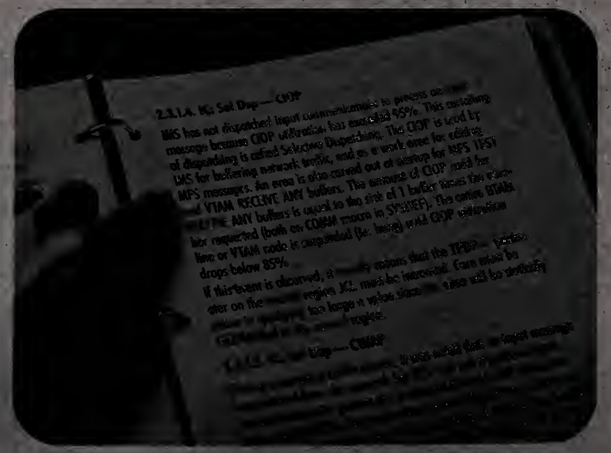
"With IMF I get off-line reports that correlate exactly to what I see in real-time. These were next to impossible to correlate before. We now have consistency and very readable reports—the data, formatting, and terminology are all the same!"



"Because we use MFS, when a user calls with a hung terminal after entering a service order, he doesn't know the transaction code. Using the IMF/ISTAT SERVICE we can see the input message, the transaction code, and the LTERM that submitted it."



"Before I had the IMF/WORKLOAD WAIT, I needed a trained person who knew how work flowed through IMS. But IMF shortens a long learning path—it makes our junior staff productive a lot sooner. As the technical manager, it even added to my own understanding of IMS by showing how work flows through the system."



"If WORKLOAD WAIT says that transactions are waiting in Input Communications because of selective dispatching due to a CIOP shortage, you can go to the IMF documentation to find what that means and what needs to be changed."



"Sometimes we like to print out an IMF screen image so we can show management the effect of a change. It gives you a really good feeling to get some positive feedback from what you've done."



"Having IMF monitor transaction queue time, elapsed time, and response time is absolutely essential. We set up 5 resource and 7 workload displays to be constantly refreshed every 5 seconds. Every minute this gives us a complete picture of how IMS is doing. It tells me at a glance that everything is okay."

"IMF has made an incredible difference for us. Like day and night. It's an integrated approach—that's the beauty of it. It's got everything we need and it all works together: the complete realtime tool, historical data, and cost accounting. With IMF, we can manage our system's performance a lot more easily and effectively. We're elated with the IMF architecture."

Discover the difference the IMF *total solution* can make for your system.

Write Boole & Babbage, 510 Oakmead Parkway, Sunnyvale, CA 94086. Or call 800-538-1893 (in Calif. 408-735-9550). In Europe contact the European Software Company GmbH: Adersstrasse 30, 4000 Düsseldorf 1, West Germany.

Boole & Babbage

NEW VISIONS IN SYSTEMS MANAGEMENT.

©1983, Boole & Babbage, Inc.

Film Forum to Unreel Movies Covering Spectrum of Topics

ANAHEIM, Calif. — The National Computer Conference Film Forum will unreel here Monday, May 16 at 12:30 p.m. The forum will feature continuous videotapes and movies that encompass "the whole spectrum of the user community," Harvey Marks, special activities chairman for NCC '83, said.

The films range from five minutes to one hour in length, Marks said, and touch on everything from telecommunications to pictures of Jupiter and Saturn to the management of DP personnel.

The Film Forum Committee has reduced 30 hours of material to four or five hours of film that will be screened repeatedly. Schedules of the films will be included in registration packets.

Located in the Huntington Beach Room off the Anaheim Convention Center's North Lobby, the Film Forum will be open from 12:30 p.m. to 4:30 p.m. on Monday, from 9:30 a.m. to 4:30 p.m. on Tuesday and Wednesday and from 9:30 a.m. until 4 p.m. on Thursday.

Wednesday Panel to Feature Former Colleagues of Aiken

(Continued from Preview/18

son of I.P. Sharp Associates, inventor of APL.

Iverson, Brooks and Ashenhurst will be joined for a panel discussion by Anthony Oettinger of Harvard University, Warren Semon of Syracuse University and Maurice Wilkes of Digital Equipment Corp., the only participant who was not at Aiken's laboratory.

The panel will discuss not only Aiken's contributions in designing and overseeing the assembly of computing machinery, but also his work in numerical analysis, switching theory, data processing and computational linguistics.

To evaluate the importance of Aiken's contributions, "you have to look at it two ways," Ashenhurst said recently.

"First, there is actually what goes down in the record books, so to speak, and then there was the research and educational environment he promoted, which we think is a very important contribution," Ashenhurst said.

Aiken's tangible contributions lie in his "being one of the first people to get large-scale machines functioning that did useful work," according to Ashenhurst. Aiken's machines were known as Mark I, Mark II, Mark III and Mark IV.

Mark I was electromechanical and used available IBM relay components, while Mark IV had a large drum store, diode logic and magnetic core shift registers, the last two aspects being new developments at the time.

"He is, however, regarded as having had some blind spots about programming languages, which I think people would think inhibited his contributions in some important areas," Ashenhurst added. "You have to remember this was pre-1952, so programming languages were just a gleam in various people's eyes at that time.

"The Harvard machines were designed to have a separate program store and data store and that meant that although program modification was possible, the idea of having the machine itself process from one language to another was not inherent at all and was, in fact, unlikely to materialize," he explained.

Tangible Contributions

"But many of the people who were at his laboratory at the time went on to perform quite distinguished service in programming languages and everything else, so it was largely the atmosphere he generated which we think is a very important contribution," according to Ashenhurst.

Ashenhurst said that "one thing Aiken should be given great credit for is that he saw that this was not just an engineering discipline or a mathematical discipline, but that all sorts of applications were all interrelated and that they could feed on each other in a research environment."

To illustrate his point, Ashenhurst pointed out "one thing which I think would surprise most people if they knew it — that Aiken announced in either 1954 or 1955 [in Harvard's Division of Engineering and Applied Physics] a year-long master's degree program in 'Automatic Data Processing,' the idea being that commercial applications of computers were just as important as scientific ones. To introduce such a thing in that environment, you'd have to say a man has vision — sees what's important, has perspective and also sees how to take existing frameworks and make new ground."

ABM-85H ...an excellent choice for greater productivity!

When you visit the NCC this year, be sure to see the ABM-85H and get a "hands-on" demonstration of a truly smart terminal with unique features such as user-selectable embedded or non-embedded attributes. Feel and see the difference real quality makes.

The ABM-85H has designed-in versatility and upgradeability that makes it the perfect choice for system integrators, O.E.M.'s and large end-users.

The ABM-85H can be easily reconfigured to perform a wide variety of business applications; Kimtron will also assist a large volume user with all technical support.

All-in-all the ABM-85H is an excellent choice for a reliable and productive business terminal.



VISIT US AT NCC '83 BOOTH P-7522

Kimtron

2225-I Martin Avenue, Santa Clara, California 95050 • (408) 727-1510

Facilities Made 'Barrier-Free' For Handicapped

ANAHEIM, Calif. — Increasing awareness of the need for adequate facilities for the handicapped has prompted coordinators of the National Computer Conference to provide handicapped NCC attendees with extensive services.

Carol Johnson, in charge of facilities for the handicapped at NCC, said she hopes to make this year's convention as "barrier-free" as possible.

This year's Handi-Center will be located in the Garden Grove room off the North Lobby in the Anaheim Convention Center. Johnson said this lounge area will provide people with an escort service to and from sessions, as well as simultaneous signing at sessions (advance notice is requested) and a braille edition of the conference program.

"People get around quite well for the most part," Johnson noted. "What they really want is that the environment be as barrier-free as possible."

The Handi-Center will also be staffed by medical personnel in the event that "anything untoward" happens, Johnson said.

Hotel rooms for handicapped attendees have been reserved in the Marriott Hotel, the Disneyland Hotel and the Hilton at the Park. A shuttle service will be provided from these hotels as well as from other hotels upon special request.

More information on handicapped facilities is available from Johnson at NCC Handicapped Services, 8601 Manchester Road, Silver Spring, Md. 20901.

Tech Job Fair To Take Place May 16 and 17

ANAHEIM, Calif. — A technical career job fair will be held Monday, May 16 and Tuesday, May 17 at the Sheraton Hotel, a stone's throw away from the National Computer Conference

Sponsored by Business People, Inc. of Minneapolis, the two-day job fair will feature representatives from 40 major companies, including Apple Computer, Inc.; Boeing Corp.; Eastman Kodak Co.; GTE Sylvania Systems Group; IBM; Intel Corp.; ITT; McDonnell Douglas Automation Co.; Raytheon Data Systems Co.; Texas Instruments, Inc.; TRW, Inc.; and Xerox Corp.

The fair will be conducted as an open house, with no registration fee or interview appointments required. Recruiters will conduct interviews and provide job seekers with information and literature on their companies.

According to a Business People spokeswoman, recruiters at the fair occasionally hire people on the spot.

More information on the fair is available from Business People, which is headquartered at 100 N. 7th St., Minneapolis, Minn. 55403.

Afips Provides Driving Force for Conference

ANAHEIM, Calif. — Behind every conference is a sponsor. The spine of the National Computer Conference is the American Federation of Information Processing Societies, Inc. (Afips).

A federation of 11 organizations dedicated to aspects of data processing, Afips is responsible for coordinating the information exchange among those organizations and disseminating it to the public. Afips also acts as a liaison between the member societies and the government.

Afips cosponsors NCC with four other associations: the Association for Computing Machinery, the Data Processing Management Association, the Institute of Electrical and Electronics Engineers/Computer Society and the Society for Computer Simulation.

Afips also acts as the U.S. representative of the International Federation of Information Processing (Ifip) and publishes proceedings from its conferences.

The Office Automation Conference (OAC) is another conference sponsored by Afips. A smaller version of NCC, OAC is aimed at the office-of-the-future audience.

The 11 organizations that comprise Afips are:

- American Society for Information Sciences.
- American Statistical Association.
- Association for Computational Linguistics.
- Association for Computing Machinery.
- Association for Educational Data Systems.
- Data Processing Management Association.
- Institute of Electrical and Electronics Engineers/Computer Society.
- Instrument Society of America.
- Society for Computer Simulation.
- Society for Industrial and Applied Mathematics.
- Society for Information Display.

IBM Announced... Telex Delivered.



On the same day IBM announced their model 3178 12" CRT terminal, we delivered and installed our 3,013th model 178 12" CRT terminal.

	3274 Plug-Compatible	12" Screen, 1920 Characters	Upper Case/ Lower Case	Keyboard Choices	Response Time Indicator	Attachable Printer	Light Pen	Lease Plans Available	Narrow Keyboard	Keyboard Inter-changeable w/278, 279	Single Key Clear, PA1, PA2	Numeric Pad
Telex 178	YES	YES	YES	35	YES	YES	YES	YES	YES	YES	YES	YES
IBM 3178	YES	YES	YES	2	NO	NO	NO	NO	NO	NO	NO	NO

The Telex 178 offers more and costs less than the IBM 3178.

For a demonstration of the 178, or to arrange an actual side-by-side comparison with IBM, give your nearest Telex representative a call. Or call John Hawkins, toll-free at 1-800-331-2623.

Regional Sales Offices: Telex Computer Products, Inc.
Cherry Hill, NJ (609) 665-8066 • Atlanta, GA (404) 955-7745 • Southfield, MI (313) 358-1195
Rosemont, IL (312) 298-9800 • Garden Grove, CA (714) 898-9833
Federal Marketing
Springfield, VA (703) 922-9333
Canada
Tulsa Computer Products, LTD • Willowdale, Ontario (416) 494-4444
International
Addison, TX (214) 931-8511

***The innovation continues...*TELEX®**
Telex Computer Products, Inc. • Terminals/Peripherals
6422 East 41st • Tulsa, OK 74135 • (918) 627-1111

Orange County Nightlife Rivals Los Angeles

By Mary Andrek
Special to CW‡

ANAHEIM, Calif. — Disneyland's wholesome, family programs has set the tone for Orange County entertainment for years. However, the latest influx of former city-dwellers into the area has brought its own brand of nightlife to rival that of Los Angeles — as visitors to the National Computer Conference here next week will find out.

Lounges in local hotels provide ample opportunity for listening to a Top '40s combo, mellow pianist or country crooner. **The Territorial Saloon** (Hilton at the Park), **Merlins** (Sheraton Anaheim), **Reflections** (Grand Hotel), **The Chase** (Hyatt Anaheim) and **Top of the Park** (Disneyland Hotel) have live music and dancing most evenings. Also at Disneyland Hotel is **Sgt. Preston's Yukon Saloon**, complete with a throaty Klondike Kate and singing Sgt. Preston.

Farther north, there's **Ginger's** (Holiday Inn in Fullerton) and south, **The Library Lounge** (The Newporter in Newport Beach).

Elsewhere in Anaheim, many of the restaurants feature live entertainment and dancing in their bars. You might try **The Baron's Lounge** (upstairs in Cattleman's Wharf, 1160 W. Ball Road), **Hungry Tiger** (1168 S. State College), **Jolly Roger** (620 W. Katella) or **Mr. Stox** (1105 E. Katella).

Discos are also popular, and many have changed their styles to include more than the traditional '70s beat of the Bee Gees or Donna Summer. **Gambits** (Anaheim Marriott) and **Dance Fantasy** (Cattleman's Wharf) are two popular Anaheim discos. In Costa Mesa you'll find **The Blue Parrot Lounge** (South Coast Plaza Hotel) and in Newport Beach **The Main Brace** (Newport Beach Marriott in Newport Center).

After dark you're likely to find more singing and dancing around the airport in places like **The Moonraker** (18542 MacArthur), **Chez Dante** (1701 Corinthian Way), **The Cabaret Lounge** (Airporter Inn on MacArthur) and **Alexander's Banana** (Sheraton Newport at the corner of MacArthur and Birch St.).

Newport Beach is home for two jazz clubs — **Studio Cafe** (100 S. Main in Balboa) and **Bob Burns Restaurant** (37 Fashion Island). Both offer well-known and promising jazz talent in a small cabaret setting.

New Wave, Rock 'n Roll

Goodies also features new wave bands on certain nights and rock 'n roll on others. Two Anaheim nightclubs are also part of the rock 'n roll revival — **Radio City** (949 S. Knott Ave.) is known for its rock and rockabilly music and **Woodstock** (951 S. Knott) for rock and new wave.

Other rock 'n roll clubs include **Ichabod's** (240 E. Chapman Ave., Fullerton), **Jezebel's** (125 N. State College, Anaheim), **Cagneys by the Sea** (406 Pacific Coast Highway, Huntington Beach) and **The White House Tavern** (340 S. Coast Highway, Laguna Beach).

Foot Stompin' and Two-Steppin'

If you're interested in a little foot-stompin' or two-steppin,' two local nightclubs cater to the country crowd. **The Cowboy** (1721 S. Manchester in Anaheim) and **Crazy Horse Saloon** (1580 Brookhollow in Santa Ana) have live bands performing and a host of diversions.

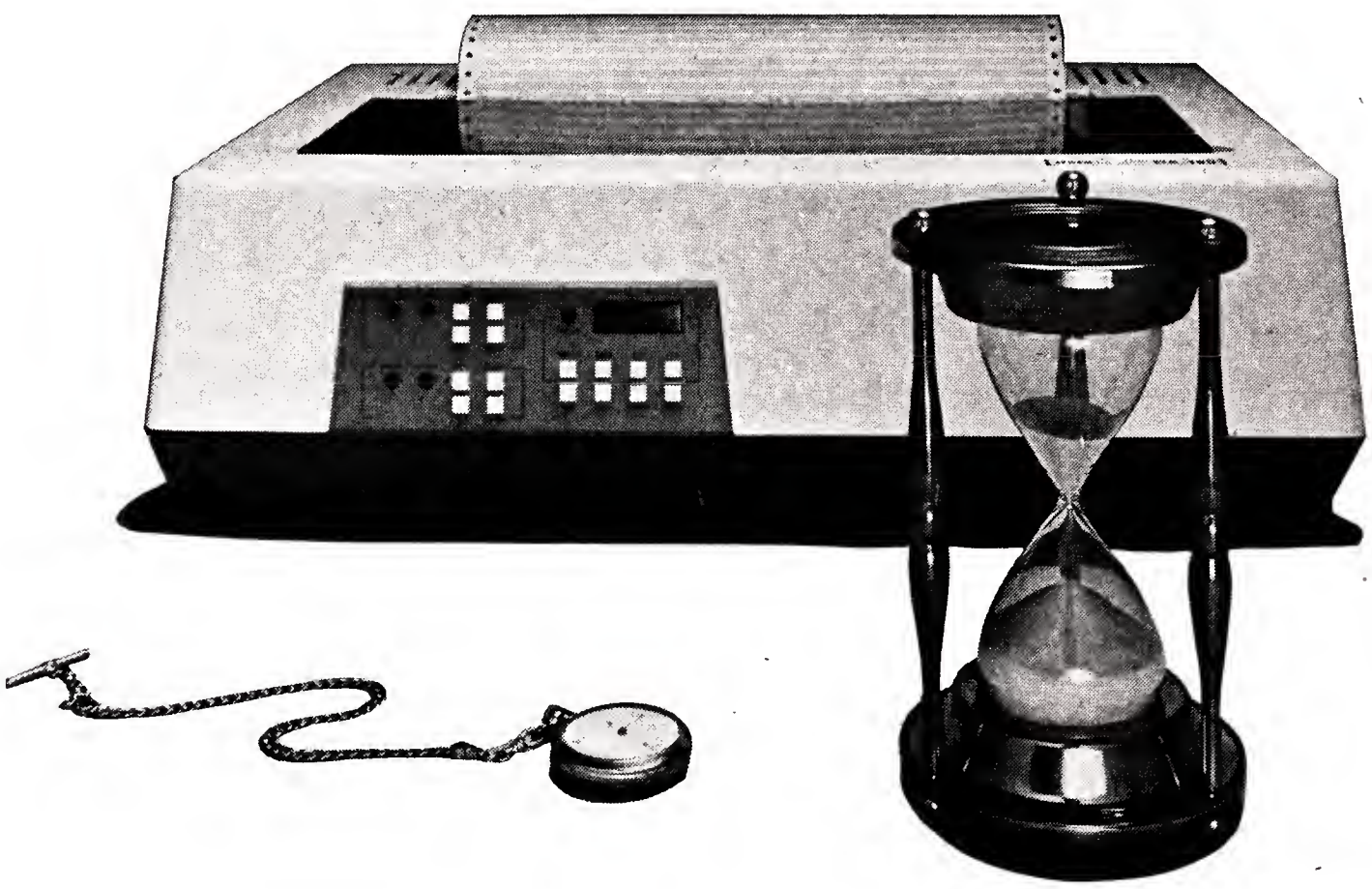
If you prefer to sit down and watch performers on stage, try **The Golden Bear** (306 Pacific Coast Highway in Huntington Beach). This is a concert nightclub that books rock, jazz, folk and classical acts. There's also **The Laff Stop** (2122 E.E. Bristol) near the airport, a stand-up comedy club that also features a racy male revue every Monday night.

The ultimate Orange County entertainment is the dinner show. It takes a number of forms, from the Polynesian show at **Kono Hawaii** (226 S. Harbor in Santa Ana) to clean-cut and enthusiastic young talent at three south county locations: **Tibbie's Music Hall** (16360 Pacific Coast Highway in Huntington Harbour), **Baxter's Street** (4647 MacArthur Blvd. near Orange County Airport) and **The Reuben E. Lee Showboat Theater** (151 E. Coast Highway in Newport Beach).

Dinner theaters are also part of this genre. There are four in Orange County that offer dinner and a well-known Broadway musical for a reasonable price. Joanne Worley is starring in "They're Playing Our Song" at **The Grand Dinner Theater** in The Grand Hotel in Anaheim. "My Fair Lady" is showing at **The Curtain Call** (690 El Camino Real, Tustin), "I Do, I Do" is at **The Harlequin** (3505 S. Harbor in Santa Ana) and "The Unsinkable Molly Brown" opens at **Sebastian's West** (140 Avenue Pico, San Clemente) on May 18.

Andrek, a free-lance writer and writing instructor at California State University in Fullerton, learned the ropes of Anaheim's thriving convention business as a publicist for Disneyland Hotel, where she worked for four years.

TIME-PROVEN PERFORMANCE



While new printers with impressive specifications are introduced on an almost daily basis, only time will tell the true quality of the product. Over the past 2 years our customers have continued to buy the DS180 printer, not only because of its impressive performance and competitive price, but also because of our outstanding track record for product reliability and customer support.

We have continually improved on the performance of the DS180 by incorporating such enhancements as dot addressable graphics, 6 user-selectable print sizes and a 2000 character buffer. These features coupled with 180 cps printing, parallel and serial interfaces, adjustable tractor feed and over 40 other programmable features, make the DS180 one of the most versatile matrix printers available today.

Before you select your next printer, why not take a look at a time-proven performer—the Datasouth DS180.

The DS180 printer is available nationwide through our network of sales/service distributors.

datasouth computer corporation
P.O. Box 240947 • Charlotte, NC 28224 • 704/523-8500

Disneyland — Growing But Never Grown Up — Not Shy About Technology

By Richard A. Sherer
Special to CW‡

ANAHEIM, Calif. — Walt Disney once made a movie about a boy who lived in Never-Never Land and vowed not to grow up. In a sense, Disney himself was that boy, and the land he created in Anaheim is dedicated to the eternal child in everyone.

In the 27 years since it opened amid the farms and citrus groves of Orange County, Disneyland has grown — from 18 major attractions in 1955 to 55 today — but it has never grown up. It is still the kingdom of Make-Believe, populated by pigs in overalls and dancing chipmunks, presided over by a mouse.

Make that The Mouse, for in the last quarter century, Mickey has become the best known rodent in the world, and his Anaheim domain has been visited by nearly 225 million guests — almost equal to the population of the U.S.

Sophisticated Technology

A key to Disney's genius and the continuing success of Disneyland was his use of sophisticated technology to achieve a world of illusion and fantasy. Chief among these techniques is the process known as "audio-animatronics," which employs a 32-channel, 1-in. magnetic tape to control the actions of animated characters.

The tape carries audible and inaudible sound impulses as well as music and dialogue and can control up to 438 separate actions. The sound impulses activate pneumatic and hydraulic valves within the performing figures. Air and fluid tubes and devices expand and contract, creating the animated effect.

Disney technicians began experimenting with audio-animatronics in the early 1950s, using cam-and-lever mechanisms on miniature human figures. When Disneyland was built, this technique was combined with the electronic-hydraulic-pneumatic system to produce characters for attractions such as the Jungle Cruise in Adventureland — one of seven theme lands within the park — and Nature's Wonderland.

The first "pure" audio-animatronics system, which abandoned the use of cams and levers entirely, was the Enchanted Tiki Room, which opened in the summer of 1963. The Tiki Room and its surrounding Tiki Garden feature 225 animated birds, flowers and carved South Sea totems, each controlled by up to seven electrical "lifelines."

Other audio-animatronic attractions were added to the park during the '60s, including It's a Small World, the Primeval World, Tomorrowland's Mission to Mars and Big Thunder Mountain in Frontierland.

Meanwhile, Disney technicians continued to refine the techniques for the Pirates of the Caribbean, the Haunted Mansion, Country Bear Jamboree and America Sings. In these attractions, each scene is an individual, complete and continuous performance. The separate sound, light and figure controls of each scene are isolated from the preceding and following scenes through the use of independent program elements.

While these attractions continue to entertain visitors to the park, technicians are developing still more uses of audio-animatronics. The lip

(Continued on Preview/26)



A pirate chieftain attempts to auction a young maiden in a scene from 'Pirates of the Caribbean.' More than 100 audio-animatronics figures highlight this 15-minute adventure.

What's In A Name?

Wedge/wej/n. 1. A simple tool used for splitting wood and rock, or for tightening by being driven into something. 2. Something used to initiate an action or development.

WedgeBox/wej bäks/n. What you need to cut through all your interfacing problems, tighten up your system's printing productivity, and raise the capacity of your choice in printers.



WedgeBox™ is a universal Protocol Converter unit housing a Mother/Daughter board with power supply. WedgeBox will interface your choice in printers to your computer system. And on some printers, provide you with Magnum* graphics capabilities.

WedgeBox...obviously what you need to initiate action and develop your system's printing potential! WedgeBox...obviously from the graphics and interfacing experts at QMS!

WEDGEBOX

QMS QUALITY MICRO SYSTEMS
P.O.Box 81250 · Mobile, Al. 36689 · (205) 633-4300

See us at N.C.C. '83-Booth P7601

Quality is more than our name. It's our business.

YES! I'm interested in WedgeBox solutions to my interfacing needs. Please send me literature on the WedgeBox.

NAME:_____ TITLE:_____

COMPANY:_____ TYPE OF BUSINESS:_____

ADDRESS:_____

CITY:_____ STATE:_____ ZIP:_____ PHONE:_____

I WOULD ___ WOULD NOT ___ LIKE A SALESMAN TO CALL

I WOULD ___ WOULD NOT ___ BE INTERESTED IN BECOMING A WEDGEBOX OEM.

CW004



Big Thunder Mountain is a landmark in Frontierland.

Disneyland — Growing But Never Grown Up

(Continued from Preview/25)

movements of characters now can be programmed to match the pronunciation of words on the tapes, heightening the illusion of realism. And at the opening of Disney's Epcot Center in Florida last year, the first walking audio-animatronics figure was introduced.

Seven Theme Areas

For the typical visitor who zips through Disneyland on the monorail, however, the secrets behind these technical marvels mean little. There is still the wonder of fantasy, the inevitable urge to grin when confronted by larger-than-life cartoon characters shaking hands with solemn three-year-olds, the happy terror of hurdling through black space in Space Mountain and the contentment that comes from a leisurely cruise on the stern-wheeler Mark Twain.

All this happiness is contained in a scant 76.6 acres; even the parking lot (107.3 acres) is larger. Within that small space, 11 million guests are annually accommodated in seven theme areas:

- **Main Street** — a composite of idealized small-town America at the turn of the century, with silent movies, gift shops, horse-drawn streetcars and quaint gift shops staffed by quaintly costumed sales clerks.
- **Adventureland** — a visit to the exotic regions of Asia, Africa and the South Pacific and home of the Enchanted Tiki Room.
- **Bear Country** — a re-creation of the American Northwest wilderness and home of the Bear Country Jamboree.
- **Frontierland** — a return to the world of pioneers and the heritage of the Old West.
- **New Orleans Square** — quaint antebellum shops and the Pirates of the Carribean.
- **Tomorrowland** — the world of the future, which sometimes is pressed by the technology of the present.
- **Fantasyland** — perhaps the best-known of all Disneyland realms — has been undergoing extensive renovation for the last 19 months and is scheduled to open again later this summer. However, the popular Small World attraction still is accessible, unaffected by the changes that will see each of the traditional Fantasyland rides expanded and remodeled and the addition of a new adventure featuring Pinocchio, the puppet who sought to become a real boy.

Interspersed within these frameworks is live entertainment, including headline entertainers in various locations around the park.

Of course, dining is not forgotten, either. Each land has an eating establishment in keeping with its theme, from the formal elegance of New Orleans Square and the exotic South Seas dinner show in Adventureland to the perhaps symbolic fast food stands of Tomorrowland.

In spite of the availability of alternatives, Disneyland reports that its guests consume 4.5 million hamburgers and two million hot dogs a year, accompanied by enough soft drinks to fill a five-acre lake.

Perhaps the least-noticed characteristic of the park is its constant cleanliness. Streets and walkways are steam-cleaned every night after closing, and unobtrusive janitorial employees circulate among the tourists, collecting up to 30 tons of trash a day.

Sherer, a veteran journalist and public relations consultant, now works as a freelance writer. His specialties include science, health care and business writing.

New High-Speed Printing and Graphic Products Shown at NCC

KEL Inc. — the newly formed US subsidiary of Kanematsu Electronics Ltd. — proudly announces an expanded line of intelligent printers and terminals. Advanced peripherals that enable you to create high-quality text and graphics in record time. We believe they offer a new level of utility to the American computer user.

Visit us at NCC Booth S 5296, where we'll be demonstrating these latest KEL computer peripherals:

KEL 8211 **Laser Printer**

High-speed printing, high-level graphics, excellent print quality, IBM compatible. At an affordable price.

KEL 5211 **Laser Printer**

A smaller version of the 8211. Excellent speed, graphics and resolution. Plus the ability to optically "overlay" a secondary document on the printed sheet.

KEL 4135 **Graphic Printer**

A high-speed impact printer with outstanding print quality. Accepts "Plot-10" graphic commands for easy graphic plotting. Bar code printing option available.

KEL J-1014 **Graphic Terminal**

A 1024x780 monochromatic terminal. Outstanding drawing speed. Tektronix 4014 and DEC VT-100 compatible plus additional intelligence. Excellent price/performance.

KEL... "Meeting the Next Century with High Technology"

KEL Inc.
One World Trade Center, Suite 4811
New York, N.Y. 10048
Tel: 212-524-8350
Telex 125202

Knott's Berry Farm — Oldest U.S. Theme Park

By Richard A. Sherer
Special to CW‡

BUENA PARK, Calif. — The year was 1934. Next to a roadside produce stand, where travelers could park their flivvers and sample a new variety of berry developed by a Mr. Boysen, stood a farmhouse where home-cooked chicken dinners were sold in the family dining room.

Last year, one and a half million chicken dinners were served in the restaurant that grew out of that little farmhouse dining room. And four million visitors tramped over the ground where Mr. Boysen's berries grew.

But now those visitors are riding a double-loop roller coaster, panning for gold and watching a comic-strip dog cavort on the ice in a 2,100-seat theater.

Knott's Berry Farm, not far from Anaheim for next week's visitors to the National Computer Conference, bills itself as the oldest "theme" amusement park in the U.S. It is certainly one of the most popular, ranking third in attendance behind only Disneyland and Disney World.

The park is still operated by the descendants of Walter and Cordelia Knott, who settled 10 acres in Buena Park in 1920. Cordelia began serving her famous chicken dinners 14 years later, when the Great Depression cut into the sales of the farm's roadside berry stand. In the early '40s, Walter began assembling a replica ghost town next to the restaurant as a diversion for waiting diners.

Ghost Town, a reproduction of an 1880s mining town, eventually grew to encompass 33 rides and attractions, including a gold mine where visitors can pan for the yellow metal and an authentic narrow-gauge railroad. Cowboys, Indians and dance hall girls in colorful costumes stroll the streets, and a mock shoot-out in front of the saloon is recurrent testimony to Walter's belief in the triumph of good over evil.

'Montezooma's Revenge'

While Ghost Town remains the heart of Knott's Berry Farm, it is the giant "Montezooma's Revenge" — a 76-foot-high, backward-loop roller coaster — that catches visitors' eyes as they drive up to the park. Twenty-eight brave riders are accelerated from zero to 55 miles per hour in five seconds through a 360-degree loop to the top of a 140-foot ramp, then taken through the same trip — in reverse.

"Montezooma's Revenge" is only one of the thrill rides for the adventurous in Knott's four theme areas. Others include a 20-story parachute drop and the Corkscrew, a double-loop roller coaster located in the Roaring '20s and Knott's Airfield section.

For the more sedate, at-

(Continued on Preview/28)

Next Week on the Farm

Next week's offerings at Knott's Berry Farm will include a two-day Ms. Pac-Man arcade game giveaway May 14 and 15 and a display of TV's *Dukes of Hazzard* stunt car, the *General Lee*.

Opera star Roberta Peters will appear at the Good Time Theatre at 8 p.m. on Wednesday, May 18, performing a selection of classical and popular compositions. Ticket information for this concert is available by calling (714) 971-9400.

Knott's Berry Farm is open from 10 a.m. to 6 p.m. Monday through Thursday; 10 a.m. to 10 p.m. Friday; 10 a.m. to 11 p.m. Saturday; and 10 a.m. to 8 p.m. Sunday. Parking is free.

From the ridiculous to the sublime...

These days you can see just about everything on personal and home computer video screens. Pie-men. Pie-charts. Banks of alien invaders. And bank accounts.

Now you can display it all with a name your customers already know for great video: Panasonic Personal Computer Displays. They carry the same outstanding quality and reliability that have made Panasonic a household word. Not to mention a very tempting profit opportunity for you.

You can offer the high resolution (1100 lines typical) monochrome TR-120M1PA, with a 12" (diagonal) direct-etched screen for minimized glare and sharp character/graphic displays. Or the dual-mode 10" CT-160, switchable for full color games and graphics or sharp black & white data display, at the touch of a button . . . complete with audio for game sound effects or speech synthesizers.

We've also got 10" RGB and 13" RGB/composite displays with audio, that are compatible with IBM, NEC and APPLE III computers. Plus a new 45" projection computer display with both RGB and composite color capabilities.

All Panasonic Displays are U.L. listed and carry FCC Class B certification. They're attractively priced for your customers, and profitably priced for you. Find out how easy it is to make them part of your line – write or call Panasonic Industrial Company, Information Systems Group, One Panasonic Way, Secaucus, N.J. 07094; (201) 348-5330.

Everything looks right on a Panasonic Personal Computer Display.



Panasonic
Industrial Company

SEE US AT NCC BOOTH #3556

Oldest U.S. Theme Park Started as Berry Farm

(Continued from Preview/27)
tractions range from the Good Time Theatre, which features headline entertainers and an ice show starring Charlie Brown's famous dog, Snoopy, to the storybook Knott's Bear-y Tales Ride, a gentle odyssey through a gypsy camp and country fair on the trail of a pie-stealing coyote.

In between, Knott's maintains a careful blending of old and new. The Bottle House in Ghost Town, assembled from hundreds of bits of broken bottles embedded in adobe, features a priceless collection of antique music machines in perfect working order, while the Bear-y Tales Ride rends its way above an arcade that resounds with the beeps and whistles of the latest electronic games. And while The Good Time Theatre played host recently to the 18th annual Academy of Country Music Awards presentation, visitors still hissed at the villain in an old-fashioned melodrama at the Birdcage Theater.

Although there is no shortage of rides and attractions at Knott's, some of the action takes place outside the park's gates. A shopping arcade lines the path leading to the ticket booths, and three family restaurants — Mrs. Knott's famous chicken house, a steak house and a garden buffet — attract drop-in diners.

Across the street from the park proper, a tree-lined walk leads past Henry's Auto Livery, where youngsters may drive replicas of classic cars, to a miniature lagoon surrounded by a scaled-down railroad and a carousel. A burro ride gives visitors a sense of the Old West, while pedal boats circle a tropical-looking island and the "Cordelia K" riverboat.

Independence Hall, modeled after the birthplace of the nation, recalls the country's heritage in the midst of well-tended lawns and benches.

Candy Kitchen

No trip to Knott's is complete without a visit to the candy kitchen, where giant paddles engage in a day-long taffy pull in front of an accommodatingly large window. The adjacent candy store also features Knott's extensive selection of preserves, including one made from Mr. Boysen's berry, which brought Walter Knott his initial fame.

The original berry farm was well-established in 1932, when the U.S. Department of Agriculture asked Knott's help in tracking down Rudolph Boysen, an Orange County farmer who had developed a hybrid strain of berry that reportedly was larger, juicier and had a better flavor than the young berries that were the area's staple.

Like other Southern California attractions, Knott's Berry Farm continues to grow. Later this summer, the park will open Camp Snoopy, an area with a High Sierra theme and featuring a petting zoo, steam boats, a Ferris wheel and a computer learning center. With the addition of Camp Snoopy, Knott's will be offering a total of 165 rides, shows and attractions.



The world's first upside-down roller coaster, Knott's Berry Farm's Corkscrew features two 360° loops through which passengers are carried at speeds up to 45 miles per hour.

What's it worth to you... if Zilog can prove that System 8000 is the most powerful Unix-based microcomputer you can buy?



There's only one way to prove that one computer system will outperform all others. Benchmark it. Test it. Then compare the results! That's the challenge we're giving to OEM's and systems houses serious about multi-user systems. Run your benchmarks on any other two UNIX-based micros and...

1. WE'LL PROVE...that the System 8000 has more raw computing power—so your CPU-bound programs run faster.

2. WE'LL PROVE...that the System 8000 achieves higher data throughput; that it can open bottlenecks in your I/O-bound applications.

3. WE'LL PROVE...that the System 8000 supports the UNIX operating system more efficiently; that our computers spend less time running the operating system and more time running your programs.

4. WE'LL PROVE...that the System 8000 family best withstands the demands of a multi-user environment; that its carefully designed architecture compares with that of minicomputers.

So, what's it worth to you if we can prove System 8000 is the most powerful UNIX-based micro you can buy? Money? Time? How about your success as an OEM?

The System 8000 family is priced from $14,950 to $37,950. Its industry-compatible languages open a wide range of minicomputer applications, making it the best buy for your money.

But don't take our word for it...

Take the System 8000 Challenge. Send for our challenge kit and test any other two UNIX-based micros. Bring your results into any Zilog sales office and compare them with the tests you run on the System 8000. If we don't win, then we'll give you something valuable for taking the challenge. Call Zilog toll free at 800-841-2255 for your challenge kit and start comparing today. Or write: Zilog, Inc., Corporate Publications, A1-5, 1315 Dell Avenue, Campbell, CA 95008.

*UNIX is a trademark of Bell Laboratories.

Zilog

Pioneering the Microworld

An affiliate of EXXON Corporation

Anaheim Museums — Small, Special, Private

By Mary Andrek
Special to CW‡

ANAHEIM, Calif. — For the museum-goer, Orange County offers several small museums, unusual special collections and many private galleries, but you'll have to travel out of the county to find larger institutions on the scale of major metropolitan museums.

Orange County Museums

Bowers Museum, 2002 N. Main St., Santa Ana, (714) 547-8304. "Treasure of the Quicksilver Galleons," a traveling exhibit from the Smithsonian Institution, is on display during NCC '83. The exhibit includes more than 200 artifacts from two Spanish ships that sank off the coast of what is now the Dominican Republic in 1724 while en route from Spain to Mexico. There's also a permanent collection of African art, Indian beadwork and local historical artifacts. Hours: Tuesday-Saturday, 10 a.m. to 5 p.m.; Sunday, noon to 5 p.m.

Briggs Cunningham Automotive Museum, 250 E. Baker St., Costa Mesa, (714) 546-7660. This is home for one of the world's largest collections of rare and antique cars and one-of-a-kind sports and racing cars. Highlights are a Bugate Royale valued at $3 million, a Duesenberg "J" and an "SSJ" Duesenberg. Hours: Wednesday-Sunday, 9 a.m. to 5 p.m.

Laguna Beach Museum of Art, 307 Cliff Drive, Laguna Beach, (714) 494-6531. On display during NCC '83 is "Orange County Clay," an exhibit featuring works in the medium by 20 artists who live or work in the area. It includes murals, tiles, pottery and utensils as well as many humorous pieces. The museum also houses a permanent collection of 19th and 20th century California art. Hours: Tuesday-Sunday, 11:30 a.m. to 4:30 p.m.

Movieland of the Air, 19711 Airport Way S., Santa Ana, (714) 545-1193. A collection of antique aircraft and replicas from the early days of flight. The 36 movie veterans on display include the replica of a 1910 Curtiss Pusher used in "The Great Race" and a Stintson L-1 shown in "The Great Waldo Pepper." Hours: Tuesday-Sunday, 10 a.m. to 5 p.m.

Newport Harbor Art Museum, 850 San Clemente Drive, Newport Beach, (714) 759-1122. During NCC the museum will show "Loren MacIver: Five Decades," a collection of 45 paintings that spans the last 50 years, and drawings and porcelains by contemporary artist Irv Tepper. Hours: Tuesday-Sunday, 11 a.m. to 5 p.m.; Friday, 11 a.m. to 9 p.m.

Out-of-Town Museums

Los Angeles County Museum of Art, 5905 Wilshire Blvd., Los Angeles, (213) 857-6222. Current exhibits include "An Elegant Art: Fashion and Fantasy in the 18th Century," the museum's collection of more than 300 18th century costumes, textiles and accessories; "The Works of Edward Ruscha, Part II"; a major retrospective of works from 1973 to the present by the renowned Los Angeles artist; and "Male and Female: The Couple in African Sculpture." Permanent exhibis include American, British and European art and ancient art from West Asia and Egypt. Hours: Tuesday-Friday, 10 a.m. to 5 p.m.; Saturday and Sunday, 10 a.m. to 6 p.m.

Los Angeles County Museum of Natural History, 900 Exposition Blvd., Los Angeles, (213) 744-3414. On display this month are "The Wildlands and Wildlife of California," a photographic exhibit; "Go for Broke," dedicated to the efforts of Japanese-American soldiers in WWII; and "Gregorian Calendar," marking the 400th anniversary of the current calendar system; "California Faces From the Past"; "Hawaii's Unique and Vanishing Flora"; and "Mushrooms Up and Down Los Angeles." Hours: Tuesday-Sunday, 10 a.m. to 5 p.m.

California State Museum of Science and Industry, 700 State Drive, Exposition Park, Los Angeles, (213) 744-7400. "Industrial Aesthetics," photos of the art of industrial design, is on display through June. Permanent exhibits include "Mathematica: The World of Numbers and Beyond," designed by Charles Eames and sponsored by IBM; "The Turning Wheel," a display of the mechanical sciences and the evolution of the motor car; and displays on electricity, communications and water. All require visitor interaction. Hours: Daily, 10 a.m. to 5 p.m.

J. Paul Getty Museum, 17985 Pacific Coast Highway, Malibu, (213) 459-8402. The museum building is a re-creation of an ancient Roman villa, and the gardens contain the same types of flora that might have grown there 2,000 years ago. Collections include antiquities, paintings and decorative arts. The Bareiss Collection of Greek vases is on display indefinitely. Hours: Tuesday-Sunday, 10 a.m. to 5 p.m. You'll need parking reservations, available by calling in advance.

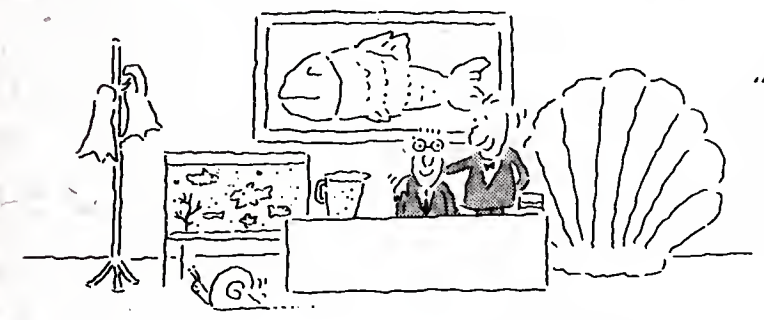
Huntington Library, Art Gallery and Botanical Gardens, 1151 Oxford Road, San Marino, (213) 792-6141. The library contains more than 600,000 books, including a Gutenberg Bible, and millions of manuscripts, among which are Chaucer's *Canterbury Tales* and Thoreau's *Walden.* The art gallery houses British 18th and 19th century art, including Gainsborough's "Blue Boy." On display in May is a selection of English landscape prints. The gardens contain plants and trees from across the globe arranged in 12 botanical displays. On the 207-acre grounds you'll find a rose garden with 1000 varieties and a desert garden with the world's largest collection of desert palms. Hours: Tuesday-Sunday, 1 p.m. to 4:30 p.m. Reservations are required for Sunday visits: (213) 449-3901.

Reuben H. Fleet Space Theater and Science Center, Balboa Park, San Diego, (619) 238-1233. The theater programs feature 70mm film projected through a fish-eye lens onto a 76-ft tilted dome to produce a feeling of actually being in space. "Tomorrow in Space" is a 30-minute film depicting life in space in the 21st century. "Voices from the Sky" is a multimedia show covering the last 25 years in satellite technology. The Science Center uses visitor participation to illustrate the principles of science. Hours: Monday-Friday, 9:45 a.m. to 7 p.m.; Saturday, 9:45 a.m. to 10:30 p.m.; Sunday, 9:45 a.m. to 8:30 p.m.

How to declare your independence with TSI International...

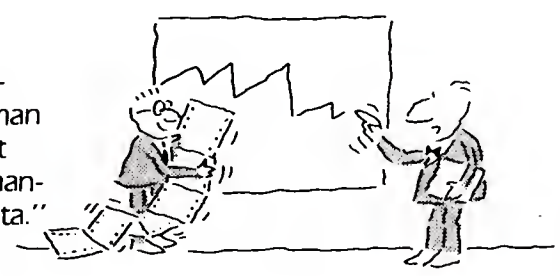
the software company that gives you the freedom to succeed.

CASE HISTORY #2



"Well, son, I'm certainly glad you decided to give up Marine Biology and join the family enterprise. And now, tell me, what do you think are the company's most important assets?"

"Data, sir," you say.
"No, no son. I'm talking about our buildings, our investment portfolios, our human resources . . ." "But sir," you say, "Most innovative CEO's are taking an asset management strategy toward corporate data."



"If we had Data Catalogue 2, the data dictionary from TSI, we would have the most efficient way to manage our data resources and adapt our information systems to change. Even the federal government may soon require data dictionaries."

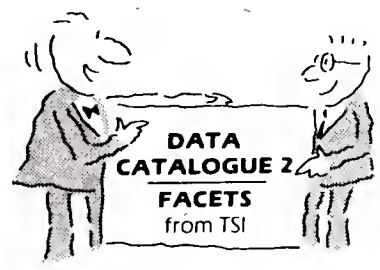


"And, Dad, with TSI's new FACETS package, we can even use our computer to create stable database designs. In other words, when it comes to data, we can maximize our return on investment."





"Son, he says, "I'm giving you the business."
"Dad," you say, "You've been doing that for years."



DATA CATALOGUE 2/FACETS, the environment independent software that's upgrading computer systems around the world.

Call (203) 853-2884 for more information.

TSI International
division of National CSS

a company of The Dun & Bradstreet Corporation

50 Washington Street
Norwalk, Connecticut 06854

DATA CATALOGUE 2 helps companies manage data resources with efficiency and cost effectiveness. And FACETS, the logical database design tool, creates and documents the system design process as it automates data modeling.

Declare your independence from outdated systems and let your company grow with software from TSI . . . a company of The Dun and Bradstreet Corporation. The source for KEY/MASTER™, DOCU/MASTER™, DATA CATALOGUE 2™, The Data Analyzer™ and FACETS™.

What's Bigger Than a 747 and Flew One Time?

By Richard A. Sherer
Special to CW‡

LONG BEACH, Calif. — Its critics called it "The Flying Lumberyard." A U.S. Senate committee suggested that it represented fraud and mismanagement of government funds. It will become Southern California's newest tourist attraction when it opens next week in Long Beach — a manageable ride from Anaheim — next to the famed ocean liner *RMS Queen Mary*.

The "it" in this case is Howard Hughes' legendary wooden seaplane, the *Spruce Goose*. Larger than a 747, with a wingspan 19 feet longer than a football field, the mammoth eight-engine aircraft will be officially opened to the public May 14 — nearly 36 years after its only flight across Long Beach Harbor.

Surrounded by an indoor lagoon, the *Spruce Goose* exhibit is housed inside the world's largest aluminum dome and is the centerpiece of an aviation history museum that also includes a full-scale model of Hughes' record-setting H-1 Racer.

Visitors can view the cockpit, flight deck and cargo hold through plexiglass windows mounted along the fuselage. A working cutaway of a Pratt and Whitney R-4360 engine, the largest radial reciprocating engine ever built, also is on display. Eight of these mechanical giants lifted the 400,000-pound *Spruce Goose* 70 feet above the water in its Nov. 2, 1947 flight with Howard Hughes himself at the controls.

When the U.S. became involved in World War II, Hughes and industrialist Henry Kaiser conceived of a giant wooden cargo plane that would ferry men and material across enemy-controlled oceans. Wood was selected as the building material because German submarines had created a shortage of strategic metals.

The federal government appropriated $18 million for the building of three aircraft; Hughes eventually contributed another $7 million of his own company's funds when Kaiser dropped out of the project.

The plane's design presented unprecedented challenges. In an era before integrated circuits and on-board microprocessors, Hughes developed mechanical and hydraulic systems to enable the flight crew — or the pilot alone, if necessary — to operate an aircraft many times larger than anything previously conceived by aviators or aircraft builders.

Unfortunately for Hughes, the war ended before the plane was completed. The government was no longer interested in funding the prototype, and a Republican Congress was seeking ammunition in a campaign to discredit the Democrats' conduct of the war. An over-budget cargo plane that had cost $18 million and never flown was a tempting target, and Hughes was grilled by a Senate committee.

During a recess in the hearings, Hughes returned to California and invited reporters aboard Hercules for a cruise across Long Beach Harbor. Then, after dropping off the newsmen, he gunned the engines and took off on an unscheduled and unexpected demonstration flight. By the time the wooden aircraft returned to the surface of the water a mile away, Hughes had ensured that public opinion was on his side in his battle with the senators.

A few weeks later, he produced evidence that the chairman of the investigating committee had accepted free passes from an airline that was competing with Hughes for the U.S. contract for transatlantic mail service, and the inquiry was dropped.

But Hughes' victory in Washington spelled the end of the line for the Hercules. The industrialist turned his attention to other interests and, as a tangle of lawsuits gnawed away at the fringes of his empire, became a recluse.

The plane was locked in a guarded hanger in Long Beach Harbor. Hughes' employees maintained the plane in perfect working condition against the day the billionaire aviator would again want to try its wings. That day never came.

The end of the *Spruce Goose*'s exile — and very nearly the end of the plane itself — came in 1980 when the lease on the hanger expired and could not be renewed. Summa Corp., the holding company created by Hughes before his death, announced plans to cut the plane into sections and donate the pieces to aerospace museums around the country.

News of this plan generated a storm of protest. Historians, aviation buffs, broadcasters and civic leaders joined a campaign to save the plane, finally persuading Summa to leave the Hercules intact if a home could be found.

The Aero Club of Southern California, an organization of flight historians, was given title to the plane. Wrather Corp., which had just assumed management of the *Queen Mary* hotel and surrounding complex, agreed to provide a resting place for the *Spruce Goose* and to operate it as an exhibit on behalf of the Aero Club.

In just 7 hours you can put the power of networking in data communications to work for your company.

Sign up for this new seminar now.



How does your network grow? You can save time and costly mistakes simply by learning the basics in data communications now. This seminar can help. It shows how modems and multiplexers work. What carriers offer. And it even covers alternatives for efficiently extending computing resources to remote locations. And gives you a list of "must questions" for suppliers that can save you money.

All that plus priceless advice and techniques on how to analyze your own network needs. Bonus: Infotron's Network Traffic Analysis Worksheet. Includes formulas, worksheet, template... everything to make figuring out your own network requirements easier. Don't miss out. This seminar will pay for itself in time and money again and again. Sign up today.

Location:	*Date:*
Philadelphia	May 10
Pittsburgh	May 12
Chicago	May 24
St. Paul, MN	May 26
Washington, D.C.	June 6
New York	June 8
Boston	June 10
Los Angeles	June 14
San Francisco	June 16

Pick up the phone and put the power of networking in data communications to work for you. Call Sandy Harper at Infotron, (800) 257-8352 or (609) 424-9400 in New Jersey. Ask about our seminars and our free brochures.

If you already have a network ask about our *Executive Seminar on Data Communications and Network Systems* which covers all the latest Infotron networking products.

Infotron Systems

Infotron Systems Corporation • 9 North Olney Avenue • Cherry Hill, New Jersey 08003

Break the Chains of Terminal Dependence

Software Partners/400 puts you in command. It liberates you from the computer of your choice to the terminals of your choice. DIALOGUE is a proven software product that supports:

- All types of terminals (from $500 up)
- Full block mode for efficiency
- Packet switched networks (Datapac, Telenet, etc.)
- All kinds of personal computers
- Unsurpassed programmer productivity



FREE
poster for VAX and Tandem users, plus 16 page brochure.

Name _____ Title _____
Company _____
Address _____
City, State, Zip _____
Telephone _____
DEC VAX _____ Tandem _____

Computerworld 5/83

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY CARD

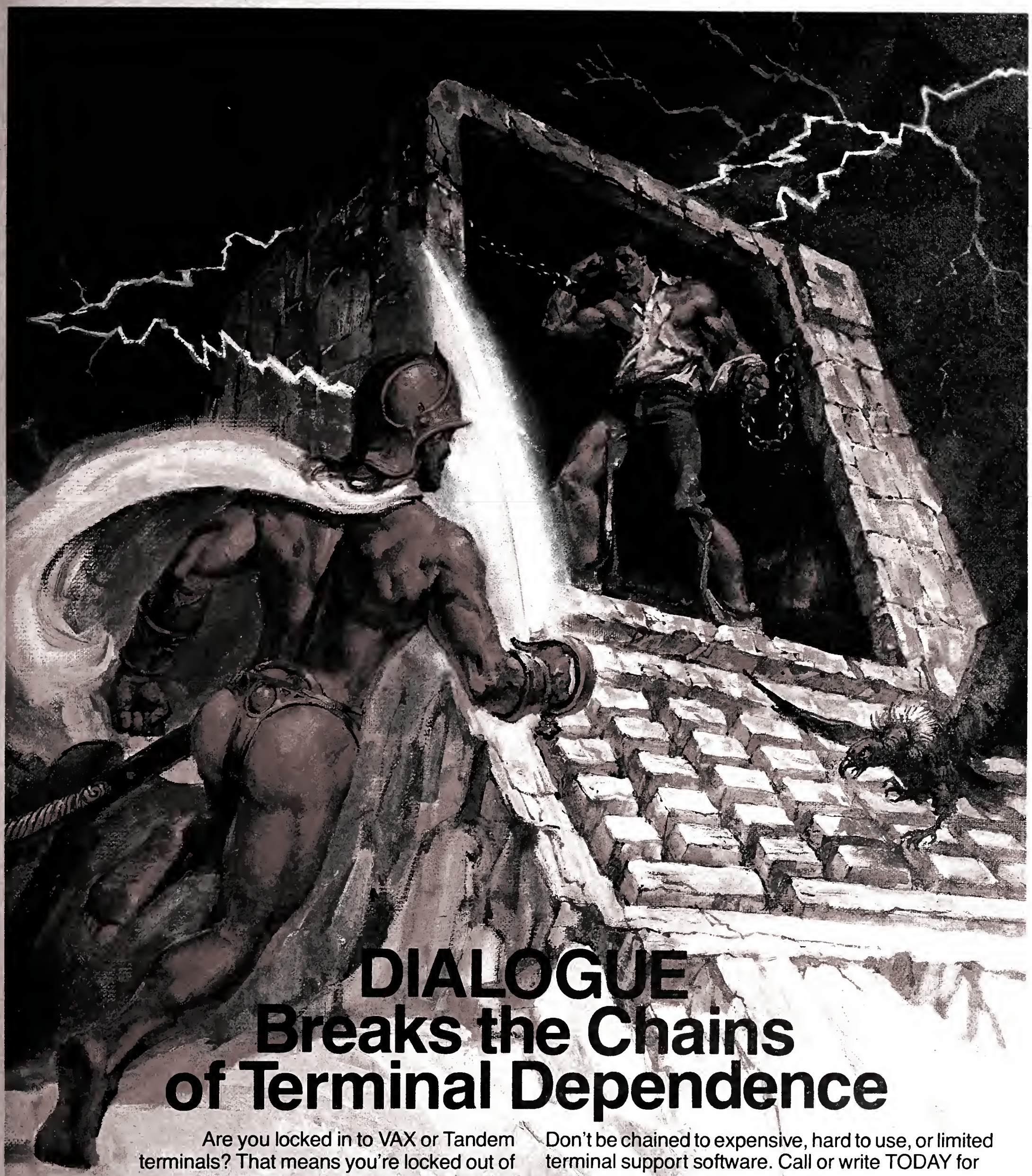
FIRST CLASS PERMIT NO. 14001 CHICAGO, IL 60606

POSTAGE WILL BE PAID BY ADDRESSEE

SSC

STANDARD SOFTWARE CORPORATION

20 N. WACKER DRIVE, SUITE 2300, CHICAGO, IL 60606



DIALOGUE Breaks the Chains of Terminal Dependence

Are you locked in to VAX or Tandem terminals? That means you're locked out of the world of personal computers, block mode terminals, word processors and any other terminal types that might let your business run more efficiently.

Software that lets you mate the computer of your choice to the terminals of your choice.

DIALOGUE is a proven software product that supports:

- All types of terminals (from $500 up)
- Full block mode for efficiency
- Packet switched networks (Datapac, Telenet, etc.)
- All kinds of personal computers
- Unsurpassed programmer productivity

Don't be chained to expensive, hard to use, or limited terminal support software. Call or write TODAY for a FREE 16 page brochure on "Breaking the Chains of Terminal Dependence."

SSC

STANDARD SOFTWARE CORPORATION

700 Bay Street, Suite 2200
Toronto, Ontario, Canada M5G 1Z6 **(416) 977-8666**

166 East Superior
Chicago, IL 60611 **(312) 944-5495**

8950 Villa La Jolla Drive, Suite 1200
La Jolla, CA 92037 **(619) 450-0771**

L.A.'s the Place for a Myriad of Recreational,

By Richard A. Sherer
Special to CW‡

LOS ANGELES — "L.A.'s the Place!" is the slogan of California's largest city, but "L.A.'s the Places!" better describes the true character of Los Angeles. The city itself — easily visitable by those attending the National Computer Conference in Anaheim — stretches from the harbor at San Pedro north across the Santa Monica Mountains and the San Fernando Valley to the foothills of the San Gabriel range, 50 air miles away.

Los Angeles encompasses 465 square miles, roughly the combined areas of St. Louis, Cleveland, Milwaukee, Boston, Pittsburgh, Manhattan and San Francisco. It includes such seemingly autonomous communities as Hollywood, Encino, Van Nuys, North Hollywood and Canoga Park, among others.

Fewer than half the seven-million-plus Angelinos live in the city. Los Angeles County covers nearly 10 times the city's area, with a population of almost four million more than the city of L.A.

In addition to the city of Los Angeles, the county consists of 80 independent cities, some known in their own right — Beverly Hills, Long Beach, Pasadena and (Beautiful Downtown) Burbank. It is little wonder that writer Robert Benchley called Los Angeles "14 suburbs in search of a city."

Attractions

For a visitor with a limited amount of time, Los Angeles presents a bewildering array of cultural and recreational choices. The list that follows is not intended to be a complete catalog of what to see and do; it is only a sampling of the variety offered by the city.

Catalina Island. Twenty-six miles off the coast, this scenic island resort offers family recreation and entertainment ranging from glass-bottom boat cruises and flying fish boat trips to hiking, swimming and cycling. Daily cruises to the island depart from Long Beach, Newport Beach and San Pedro.

Chinatown. Located in the 900 block of N. Broadway, a few minutes from the Los Angeles Civic Center, Chinatown features shops and restaurants recalling Old China and the Far East. No admission charge, self-guided walking tours; included in many bus tours.

Little Tokyo, First and San Pedro Streets, near the Los Angeles Civic Center. Little Tokyo serves as the social, economic, cultural and religious center of the largest Japanese-American community in the mainland U.S. Validated parking is available for the parking structure at 111 S. Central Ave. Self-guided walking tours.

El Pueblo de Los Angeles, 845 N. Alameda St. near the Los Angeles Civic Center. This state historical park includes the famed Olvera St., birthplace of Los Angeles. Shopping, dining, restored historic buildings and monuments. Guided tours. (213) 628-1274.

Griffith Park. Coming from Anaheim, take the Los Feliz Blvd. off-ramp from the Golden State Freeway (5). Sprawling across 4,063 acres in the Hollywood Hills, Griffith Park offers hiking, tennis, golf, horseback riding and a history of transportation exhibit. The Griffith Observatory and Planetarium, located on the side of Mt. Hollywood in the park, is open to the public daily. There is a $1 fee for entering the park.

Los Angeles Zoo. Adjacent to Griffith Park, at the junction of the Golden State (5) and Ventura (134) Freeways, are 113 acres with a children's zoo, reptile house, aviary, koala house and aquatic section. Hours: 10 a.m. to 5 p.m. Admission: adults, $3; children (5-15) and senior citizens, $1. Guided tours. Information: (213) 666-4090.

Marineland, located on the Palos Verdes Peninsula. Take the San Diego Freeway (405) north to Western Ave.; Western Ave. south to Palos Verdes Drive S.; at Palos Verdes Drive S., turn right (west). Aquatic shows feature killer whales, performing dolphins and sea lions. Baja Reef offers visitors an opportunity to swim in an aquarium with 4,000 species of fish; swimming gear rental is $3.50. Hours, 10 a.m. to 5 p.m., Wednesday to Sunday. Admission: adults, $8.50; children, $6.50; seniors, $7.65. Information: (213) 541-5663.

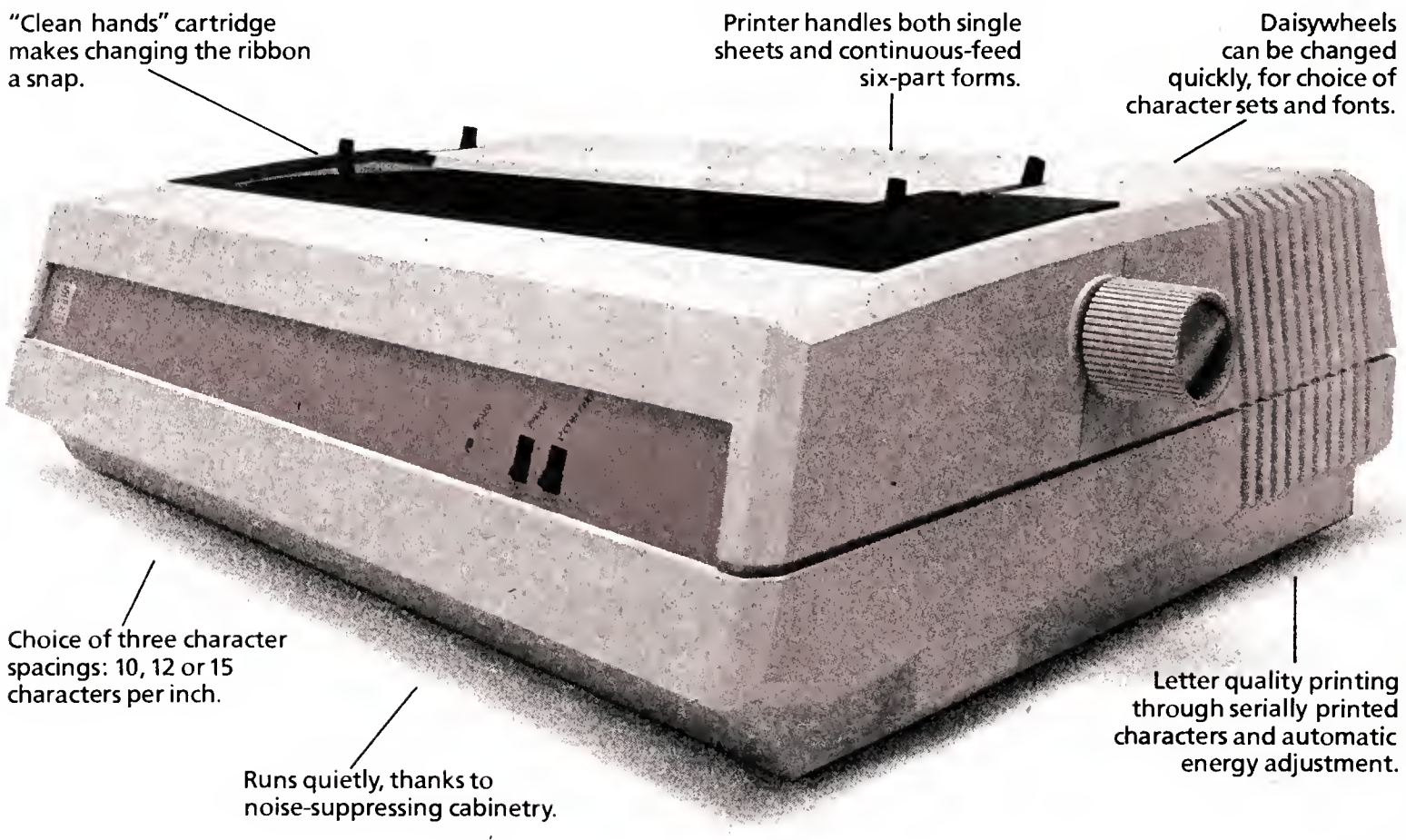
Performing Arts

Universal Studios Tour. Take the Lankershim Blvd. off-ramp of the Hollywood Freeway (101). Tram tour behind the scenes of Hollywood's largest movie studio. Live shows, museums, exhibits. Open 8 a.m. to 4 p.m. Adults, $10.50; children 3-11, $7.75. Information: (213) 877-1311.

Burbank Studios, Olive at Hollywood Way, Burbank. Take the Hollywood Freeway (101) north to Barham Blvd.; Barham north to Olive; studio is on right. This is the home of Warner Bros. and Columbia Pictures, as well as many independent production companies. It offers a VIP Tour for groups of no more than 12 people so that they may observe and discuss filmmaking. Tours Monday through Friday, 10 a.m. and 2 p.m.; no children under 10. Price, $16 per person.; lunch is available at extra cost if reserved when tour reservations are made. Contact Manager of VIP tours, (213) 954-1744 or 954-1008.

KCET Studio Tour, 4401 Sunset Blvd., Hollywood. Take the Sunset Blvd. off-ramp from the Hollywood Freeway (101); go east on Sunset approximately 2.5 miles. Guided tours of the former Monogram Studios, now occupied by Los An-

FOR SERIES/1: NOW MAKE A BETTER IMPRESSION FOR YOUR MONEY.



Attach your Series/1 to Control Data Letter Quality Printers.

Meet the letter quality printer that brings low cost and good-looking output to your Series/1: The Certainty® 410 Printer System from Control Data. It's the receive-only tabletop printer (just 45 pounds) that delivers quality copy at 55 characters per second.

First, this Certainty miniperipheral combines state-of-the-art electronics with a direct drive system that boosts performance and cuts maintenance requirements. Second, you can select the character spacing (10, 12 or 15 per inch), line width (up to 198 characters per line) and line spacing (6 or 8 lines per inch vertically). So you can tailor your printed output to fit your needs neatly and precisely.

Your operator can change daisywheels quickly and easily; and ribbons can be changed in seconds, just by snapping in a new cartridge. Plus an optional forms tractor gives you bi-directional capability.



So this 410 printer is ready for immediate attachment to your Series/1 with RS232C interface. And it's available right now.

Service isn't a problem, either. More than 5000 Customer Engineers help make sure that Certainty miniperipherals live up to their name.

Make increased effectiveness a Certainty.

No matter how you're using your Series/1, there's a Control Data miniperipheral that'll pay off for you in price *and* performance.

Call today for more information, toll-free: 800/328-3390.

CONTROL DATA

Addressing society's major unmet needs as profitable business opportunities

Cultural Experiences

geles' PBS affiliate. Free group tours Tuesday and Thursday. Reservations required: (213) 667-9242.

ABC Entertainment Center, Century City. Take the Santa Ana Freeway (5) to the Santa Monica Freeway (10); go west on the Santa Monica Freeway to Robertson Blvd.; Robertson Blvd. north to Olympic Blvd.; Olympic Blvd. west to Ave. of the Stars and turn right; the center is opposite the Century Plaza Hotel. The complex includes the Shubert Theatre (see below), Plitt (movie) Theatres, Playboy Club, the Hollywood Experience tour and a number of restaurants and shops. Information: (213) 557-6491; Hollywood Experience: (213) 553-0626.

NBC Studios, 3000 Alameda Ave., Burbank. Take the Buena Vista off-ramp from the Ventura Freeway (134). Tours daily, 10 a.m. to 5 p.m. Adults, $3; children 5-11, $2. Information: (213) 840-3572.

Hollywood Bowl, Highland Ave. at the Hollywood Freeway (101). Famed natural amphitheater in the foothills, offers evening concerts throughout the summer. Grounds open daily 9 a.m. to 5 p.m. Information: (213) 876-8742.

Mann's Chinese Theatre, 6925 Hollywood Blvd. Take the Highland Ave. off-ramp from the Hollywood Freeway (101); go right on Hollywood Blvd. Hand- and footprints of many stars are preserved in concrete in the forecourt of this famed Hollywood landmark. Major first-run movies premiere here. Information: (213) 464-8111.

Music Center, Grand Ave. at Temple St. Take the Grand Ave. off-ramp at the junction of the Hollywood (101) and Santa Ana (5) Freeways. At this three-theatre complex near the Los Angeles Civic Center, "Zorba" starring Anthony Quinn is playing at the Dorothy Chandler Pavilion; "Crimes of the Heart" with the original Broadway cast is at the Ahmanson Theatre. Three restaurants. Free guided tour of the Pavilion Ahmanson, and Mark Taper Forum. Tour reservations: (213) 972-7483.

Pantages Theatre, 6233 Hollywood Blvd. Take the Hollywood Blvd. off-ramp from the Hollywood Freeway (101); go west on Hollywood Blvd. One of the nation's foremost examples of Art Deco Renaissance architecture. Currently featuring "Woman of the Year" starring Lauren Bacall. Information: (213) 469-7161.

Shubert Theatre, ABC Entertainment Center, Century City. Take the Santa Ana Freeway (5) to Santa Monica Freeway (10); go west to Robertson Blvd.; north to Olympic Blvd.; west to Ave. of the Stars. Currently featuring "Dreamgirls" starring Jennifer Holliday. Information: (213) 553-8101.

Shopping

Arco Plaza, Flower St. between 5th and 6th St. Take the Santa Ana Freeway (5) north to Santa Monica Freeway (10); west to Harbor Freeway (110); north to 6th St. off-ramp. Three levels of underground shops and restaurants.

Beverly Hills. Take the Santa Ana Freeway (5) north to Santa Monica Freeway (10); west to La Cienega Blvd.; north on La Cienega Blvd. to Wilshire Blvd.; west on Wilshire Blvd. Major shopping areas include new Beverly Center complex at Wilshire and La Cienega, famed downtown Beverly Hills area including Rodeo Drive bounded by Wilshire and Santa Monica Blvd. west of Beverly Drive.

Broadway Plaza, two blocks south of Arco Plaza at 7th and Flower Streets (see directions above). Shops and restaurants in enclosed complex adjacent to Hyatt Regency Hotel.

Farmer's Market, 6333 W. Third St. Take the Santa Monica Freeway (10) west to La Cienega Blvd.; north to Fairfax Ave.; Fairfax to Third St. Unique marketplace featuring 160 shops and stores. Fresh produce, souvenirs.

Marina Del Rey. Take the San Diego Freeway (405) north to Marina Freeway (90); west to Lincoln Blvd. Seaside residential, commercial and shopping complex. Fisherman's Village, major restaurants.

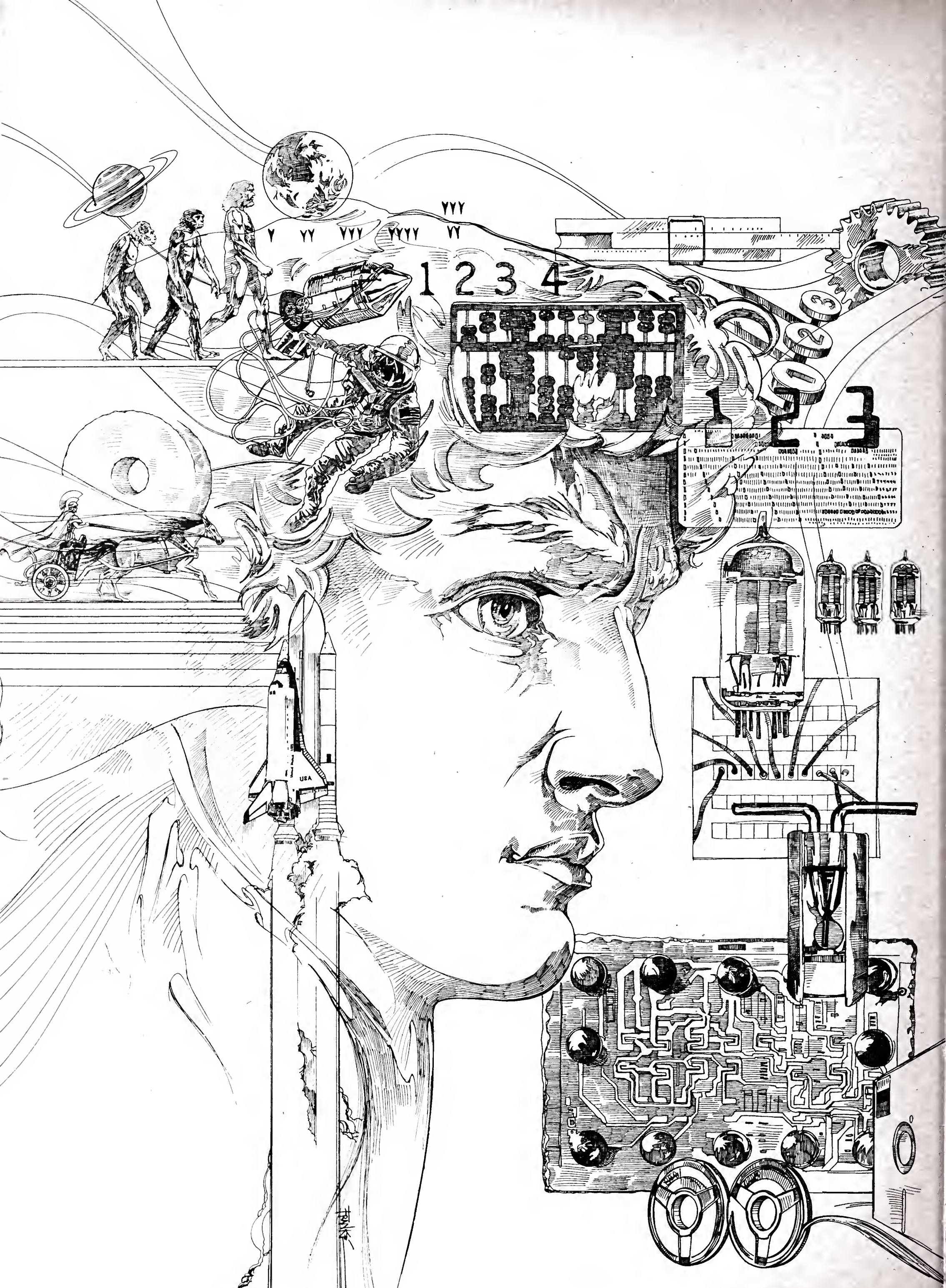
Marina Pacifica. Take the San Diego Freeway (405) to Westminster Ave.; west to Pacific Coast Highway (1). Fashion mall with shops, restaurants.

Ports O'Call Village. Take the San Diego Freeway (405) north to Carson St.; west to Harbor Freeway (110; ramp from San Diego Freeway to Harbor Freeway southbound is closed for construction); south on Harbor Freeway to Gaffey St.; south to 6th St.; east to Village entrance. Seventy-five shops, 10 restaurants, view of harbor entrance, boat rides and harbor cruises.



Downtown Los Angeles





See us at NCC, Booth # P7653.

Introducing the Auragen of the computer species.

Now a higher form of computer technology has evolved. It combines fault tolerance, high performance and ease of use. The natural selection for your business transaction needs.

Now you can have fault tolerant applications at price/performance levels never available before. For under $138,000, our entry level 2-Cluster system provides up to twice the performance of today's fault tolerant systems.

AURAGEN™ begins with an advanced 32-bit distributed architecture. Both your professional and end-user staff will find it easy to learn and use. AUROS,™ our operating system based on UNIX,™ is enhanced with performance, security, privacy and recovery capabilities specifically tailored for the transaction market. We provide ANSI 74 High Level COBOL, FORTRAN 77, Pascal, C and even business BASIC that run fully fault tolerant. No special instructions are necessary. No reprogramming. No retraining. No added expense.

We also provide a full range of interactive productivity tools for programmers, including AURAGEN's full-function relational DBMS and Transaction Processing Management System. Then we've added menus, help facilities, and an English-like query language to make your staff more productive. The extensive communications packages that we provide include SNA, BSC, X.25 and more.

The concept that sets us above and apart from all other fault tolerant systems is simple. Our fault tolerance is totally transparent and is so efficient you'll never want to turn it off. Our backup hardware is available to do productive work during normal operations. No downtime. No manual backup procedures. No added expense.

With AURAGEN's distributed design, you can grow in precisely controlled increments. The basic fault tolerant system contains two Clusters. Each Cluster contains several tightly coupled MC68000 processors. Separate processors handle fault tolerance, user programs, communications, and database functions. The system can be expanded to 32 Clusters.

AURAGEN is so advanced, you'd select our system even if we didn't provide fault tolerance. But we do. In today's competitive business environment, you need every survival factor working for you. We provide them all. And we want to tell you more about them. That's why we invite you to ask for more information.



Auragen Systems Corp.

THE NATURAL SELECTION

CW509

AURAGEN Systems Corp.
Two Executive Drive, Fort Lee, N.J. 07024
In New York, (212) 605-0152 Call toll-free 800-847-4276.

I'm interested in the AURAGEN System. Tell me more

Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Telephone _____

™AURAGEN and AUROS are registered trademarks of AURAGEN Systems Corp
™UNIX is a registered trademark of Bell Laboratories
© 1983 AURAGEN Systems Corp.

All of California's Wineries Not in the North

By Liane Lucietta
Special to CW‡

ANAHEIM, Calif. — Northern California no longer has an exclusive hold on the production of fine California wines. Just a little over one hour's drive from the site of the National Computer Conference, the Temecula area has weather conditions almost identical to those of the Napa Valley. Although the oldest winery is only nine years old, the wines produced here have placed well in almost every category of wine judging.

Seven wineries are open for tours and tasting in the Temecula area. Most are small, family-run operations. All are located fairly close to one another. When you're in the area next week, drop in and visit:

• **Hart Winery,** four miles east of I-15 off Rancho California Road. Access is from a dirt road you follow up the hill to a barn. Available for purchase: Sauvignon Blanc, Chenin Blanc, Petite Sirah, Cabernet Sauvignon. Hours: 11 a.m. to 4 p.m. Saturday and Sunday, by appointment on weekdays. Information: (714) 676-6300.

Joe Hart came from a family of teetotalers but was introduced to wine while in the army during the mid-'50s. He worked as a scientist at Scripps Institute of Oceanography and for 13 years as a teacher in Carlsbad before purchasing land in Temecula in 1973. Hart planted the vineyards in 1974 and opened the winery in 1980.

• **Callaway Vineyard and Winery,** 32720 Rancho California Road, the first driveway past Hart Winery. For purchase: two different Chardonnays (one a French oak reserve), Cabernet Sauvignon, Petite Sirah, Zinfandel, Chenin Blanc, Sauvignon Blanc, Fume Blanc, a dry White Riesling, a selection of dessert wines. Hours: 10 a.m. to 5 p.m. daily. Guided tours are free and begin on the hour until 4 p.m. There is a $1 per person charge for the tasting and sit-down lecture. Information: Beverly Ashbrook, director of the visitor center, (714) 676-4001.

Ely Callaway is the driving force behind the winery, building its reputation without advertising through heavy publicity and marketing. Callaway started the operation in 1973 while president of Burlington Industries. Hiram Walker Corp. purchased the operation in August 1981. Callaway is still chairman of the board.

Callaway employs the latest equipment and techniques and is the best known, most commercial and elaborate operation in the area. Few or no chemicals are used in the vineyard.

• **Piconi Winery,** 33410 Rancho California Road, about a half-mile east of Callaway. Since Piconi Winery opened last July, its own wines will not be ready until 1986. However, local wines are available for purchase. Hours: 10 a.m. to 5 p.m. Friday through Sunday, by appointment Monday through Thursday. Information: (619) 728-5774 or (714) 676-5400.

Dr. John Piconi, a urologist, located in Fallbrook nine years ago; he made wine at home in his spare time. Piconi became friends with Vince Cilurzo (of Cilurzo Winery), and they decided to start a winery together. The partnership was dissolved in 1980, but they remain friends.

• **Mount Palomar Winery,** 33820 Rancho California Road; a large redwood tank marks the entrance. Available for purchase: Chablis, Vin Rose, Burgundy, Sangria, Marsala, Chardonnays, Sauvignon Blanc, Chateau Palomar Sauvignon Blanc, White Riesling, White Zinfandel, Vintage White, Chenin Blanc, Vintage Rhine, Zinfandel, Shiraz, Cabernet Sauvignon, Petite Sirah, sherries, extra dry Champagne, brandy. (The Champagne and brandy are made elsewhere.) Hours: 9 a.m. to 5 p.m. daily. Tours start at 1:30 and 3:30 p.m. daily with an additional tour at 11:30 a.m. weekends. Information: (714) 676-5047.

The dome of Palomar Observatory is visible from the vineyards on a clear day, hence the name. Mount Palomar owner John Poole was originally in broadcasting and founded what eventually became KBIG-FM Radio in Los Angeles.

Poole planted Mount Palomar's vineyards in 1969. In 1975 the winery was built and the operation became commercial.

• **Cilurzo Vineyard and Winery,** 41120 Calle Contendo at the corner of Rancho California Road. Look for the dirt road entrance on the south side of Rancho California Road. For purchase: Chardonnay, Chenin Blanc, Fume Blanc, Gamay Beaujolais, Cabernet Sauvignon, Petite Sirah. Hours: 9 a.m. to 5 p.m. Saturday and Sunday, by appointment weekdays. Information: (714) 676-5250.

The Cilurzo family moved to Temecula in 1967.

Cilurzo Winery is a small, family-owned operation. Informal tours are usually conducted by Audrey or Vince Cilurzo.

• **Mesa Verde Winery,** 34565 Rancho California Road. The mission-style building on a hilltop can be seen from a distance. Available for purchase: Johannesburg Riesling, a white table wine which is a blend of Johannesburg Riesling, a rose, a Petite Sirrah and wines from nearby Hugo's Cellars as well as from 120 different California wineries. Hours: 9 a.m. to 5 p.m. daily for the wine shop and tasting room. Tours are by appointment only but, due to construction, there is not much to tour at present. Information: (714) 676-2370.

Mesa Verde owners Keith and Lynne Karuum founded the winery in 1980. Lynne took agriculture courses at the University of California, Davis. Keith has a B.A. in viticulture.

• **Filsinger Vineyards and Winery,** 39050 De Portola Road. At Glen Oaks Road go south to De Portola Road, then right until you get to Filsinger. Available for purchase: Fume Blanc, Chardonnay, Petite Sirah, Zinfandel, Gamay Beaujolais, a dry, low-alcohol Emerald Riesling and a late-harvest Johannesburg Riesling. Hours: 10:30 a.m. to 5 p.m. Saturday and Sunday, by appointment weekdays. Information: (714) 676-4594.

The focus at Filsinger Winery is on white wines made in the German style.



We're CW Communications/Inc.; the world's largest publisher of computer-related newspapers and magazines. And wherever you go in the computer world, you'll find computer professionals reading — and relying on — our publications. With highly trained and experienced editorial staffs all over the world, our publications give readers the best and most up-to-date information available in this rapidly-changing industry.

Around the world.

We publish, co-publish or provide editorial services to the leading computer publications in the world, including publications in all of the following countries:
Scandinavia — *Denmark, Sweden and Finland*
Western Europe — *Germany, the United Kingdom, France, Italy, Spain, Greece, the Netherlands*
The Mid-East — *Kuwait, Saudi Arabia*
Asia/Africa — *the People's Republic of China, Hong Kong, Korea, Japan, Southeast Asia, South Africa*
The Southern Pacific — *Australia*
Central and South America — *Mexico, Brazil, Argentina, Chile.*

In the United States.

In the world's largest computer market, we publish a series of publications covering different aspects of the computer world. Our largest publication, with more than half-a-million readers every week, is *Computerworld,* a weekly newspaper aimed primarily at larger computer users. Its companion publications include *Computerworld OA,* covering Office Automation; *Computerworld on Communications,* a semiannual; and a series of *Buyer's Guides* covering all major segments of the industry.

In addition, we publish *ISO WORLD* for Independent Sales Organizations, including dealers, distributors, retailers and the like.

And, to cover the microcomputer market, we have two publications: *InfoWorld,* a weekly newspaper filled with up-to-the-minute editorial coverage of interest to all micro users; and *PC World,* a monthly magazine dedicated to users of the IBM PC.

No one in the world publishes more computer information for more people in more countries than we do. And we'd be happy to give you more information on any of our publications. Just send us a telex at CW International Marketing Services, in the U.S. telex #95-1153, or contact us at the address below.

CW COMMUNICATIONS/INC.
375 Cochituate Road, Box 880, Framingham, MA 01701
(617) 879-0700

Along the Camino Real

California's Missions Offer Cleansing Retreat

By Mary Andrek
Special to CW‡

ANAHEIM, Calif. — After a series of seminars at the National Computer Conference, you may be ready for a cleansing retreat to one of the nearby missions.

Between 1769 and 1823, Franciscan fathers Junipero Serra and Fermin Lasuen founded 21 mission settlements that stretch along the California coast for 600 miles from San Diego to Sonoma. Each was about a day's journey apart, providing a convenient land link between Mexico and the northern seaports. They were spread along the route that came to be called "El Camino Real" — the King's Highway. Today U.S. Rt. 1 closely follows this historic trail.

The early religious settlements, along with the military "presidios" and the civilian "pueblos," or towns, were the foundation of Spanish civilization in the state. The missions grew and prospered for 70 years, with the resident priests and Indians establishing a trade in hide, tallow, wine, ranching and farming.

In the greater Los Angeles and Orange County area, four missions were established. The most famous of these is located about a 45-minute drive south of Anaheim along I-5 in **San Juan Capistrano**.

The mission, known for its legendary swallows who arrive on schedule every March 19 and leave every Oct. 23, has the distinction of having been founded twice. The first time was in 1775, when Father Lasuen erected a cross at the site. Eight days later, the priest got word of an Indian attack on the mission in San Diego and he and his party left the settlement to help defend the one farther south.

A year later, Father Serra led the second founding party back to San Juan Capistrano. The cross was still standing.

The first adobe church on the site was dedicated in 1778, and the mission continued to grow. By 1797 construction was under way on a larger church, an ambitious and elaborate project under the direction of Isidor Aguilar, an expert Mexican stonemason.

The great church, under construction for nine years, was destroyed in minutes in the earthquake of 1812. The people returned to worshipping in the little adobe church.

Mexico won independence from Spain in 1822, and California came briefly under its control. In 1833, the mission lands were turned over to the Indians who had inhabited them, but owners of California's vast ranchos soon became the official owners of all mission territory. Settlements were subdivided and sold, and the missions fell into ruin.

In 1862, Abraham Lincoln returned the missions to the Catholic church in the new state of California, but restoration and preservation did not begin in earnest until the 20th century. In 1922 Father John O'Sullivan, Capistrano's parish priest, rediscovered the adobe church, which had been used as a granary and storeroom for years.

Construction is now under way on a new church, a building with seven domes and a bell tower in the likeness of the great stone church that once stood on the grounds. It is scheduled to open in 1984.

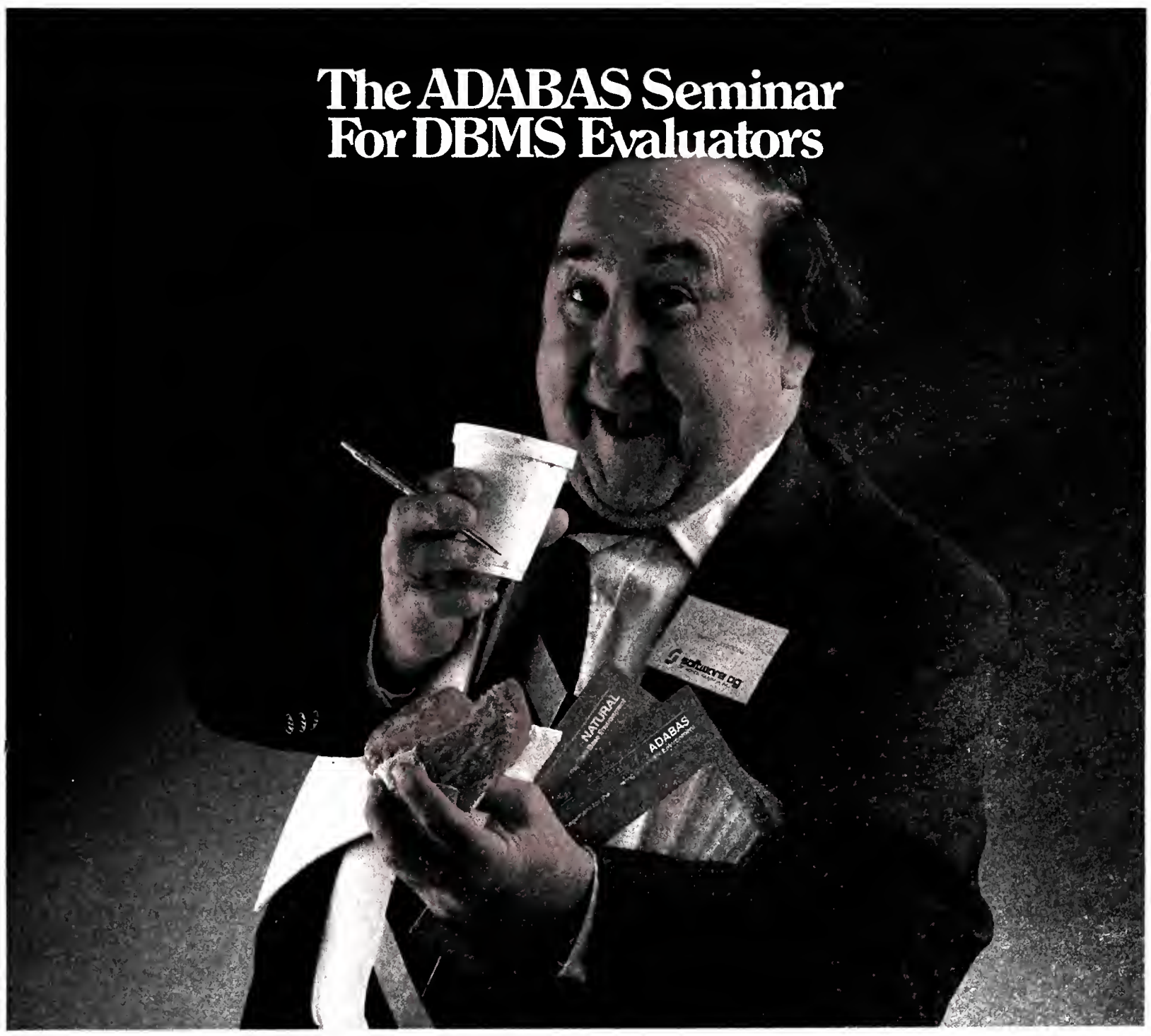
A tour of the Mission San Juan Capistrano includes the ruins of the stone church and the Campanario, or bell wall; the colorful adobe chapel where Mass is said daily; the ruins of the once thriving mission industry in soap and hide; a cemetery; and lovely pools and gardens. The mission is open daily from 7 a.m. to 5 p.m.

The **Mission San Gabriel Arcangel**, the fourth to be established in the mission chain, is located in the city of San Gabriel off I-5 at the New Ave. exit. It was founded in 1771 near what is now Montebello to help close the long gap between the first mission in San Diego and the second, some 500 miles farther north in Monterey. It was moved five years later to its present location, where construction began in 1796.

Today it houses a fine collection of mission artifacts, including a series of Indian paintings thought to be the earliest examples of native Christian art. The church is still in use and is in excellent condition. It contains a copper baptismal font brought from Spain in 1771; the massive bells in its exterior Campanario are more than 200 years old. The mission is open from 9:30 a.m. to 4:30 p.m.

Following the mission trail north from San Gabriel, you'll find the **Mission San Fernando Rey de Espana** in Mission Hills, midway between I-5 and I-405. Founded in 1797, this 17th mission in the chain

(Continued on Preview/40)



Spend a morning, save a bundle.

You're busy. You don't have the time, or the patience, to attend yet another "management seminar." And for once, you would like *hot* coffee and a *fresh* Danish.

We understand. We also know that if you have spent any time looking at data base management systems you've discovered a problem: while evaluating a DBMS is difficult, you know you should study all of your options before you choose the one you're going to live with for a long time to come. Since you want to be sure you have made the right choice, it makes sense to attend an ADABAS seminar.

Give us part of your day and we'll give you hard facts and no hype about ADABAS for data base management on your IBM 4300, 370, or plug compatible computer. You'll find out why our DBMS can be installed in a day while others can take months. You'll also learn how user-friendly a relational-like system can be. And you'll experience the benefits of using NATURAL, a productivity tool that can reduce application development time by up to 90%.

A DBMS is a major investment. We urge you to enroll in one of our free seminars to get the facts on ADABAS and NATURAL. Use the coupon to get the latest schedule and enrollment information.

software AG
OF NORTH AMERICA, INC

Software AG of North America, Inc.
11800 Sunrise Valley Drive
Reston, VA 22091 (703) 860-5050

☐ Please send me information on:
- ☐ Your free DBMS seminars:
- ☐ ADABAS, your data base management system;
- ☐ NATURAL, your online program development language;
- ☐ COM-PLETE, your TP monitor.

Name _____
Title _____
Company _____
Address _____
City _____ State _____
Zip Code _____ Telephone ( ) _____
CPU _____ Operating System _____

CW 0509

There's Nothing Like a California Beach

By Liane Lucietta
Special to CW‡

ANAHEIM, Calif. — The beaches close to Anaheim are known for good surfing, good swimming, high cliffs and sandy coves. A variety of activities such as boating, fishing and diving can be enjoyed nearby.

Repairs are under way on beachfront homes and piers that were damaged by storms earlier this year. However, swimmers and surfers should be aware that the storms created deep holes in the ocean floor, so what might normally be a gradual slope can drop off unexpectedly. It is wise to swim at a beach with a lifeguard on duty and to inquire about rip tides before going into the water.

The beaches closest to Anaheim include:

• **Seal Beach,** south of Ocean Ave. in Seal Beach, which is just south of Long Beach. Swimming, surfing, picnicking, fishing. Parking is available at Firs and Main St. The Seal Beach Pier was destroyed by recent storms, but Belmont Pier is nearby at the end of Terminal Ave. on Ocean. Pier information: (213) 434-6781. Lifeguard information: (213) 431-3567.

• **Huntington State Beach,** west of Pacific Coast Highway in Huntington Beach. Lifeguards are in towers on weekends; only patrolling lifeguards are on duty on weekdays. Swimming, fishing, picnic areas, volleyball (nets up). Ramps on the sand for disabled. Parking inside the park at the north end and on Newland St. Information: (714) 536-3053.

• **Huntington City Beach,** west of Pacific Coast Highway between Main St. and Beach Blvd. in Huntington Beach. Surfing allowed only in the morning or on uncrowded days. Swimming, fishing, bike path, volleyball courts. Lifeguard. Information: (714) 536-5281.

• **Huntington Pier,** at Main St. and Pacific Coast Highway in Huntington Beach. The pier, built in 1914 and 1,800 feet long, sustained some damage in recent storms, but is open up to the bait and tackle shop. The pier also has snack bars and is floodlit at night for fishing and surfing.

• **Bolsa Chica Ecological Reserve,** east of Pacific Coast Highway and south of Warner Ave. in Huntington Beach. Endangered bird species can be seen in this 1,200-acre marsh area. Most of the marsh is private land, but there are two viewing areas from parking lots at Pacific Coast Highway and Warner Ave. and at Pacific Coast Highway across from the main Bolsa Chica Beach entrance.

• **Newport Beach and Pier,** west of Ocean Front and south of McFadden Lane in Newport Beach. Made of concrete and 1,042 feet long, the pier is floodlit at night for fishing. Surfing allowed near 30th St. in the afternoon. Swimming, volleyball, bike path, fishing. Lifeguard. Boardwalk near the pier.

• **Balboa Pavilion,** north end of Main St. in Balboa. Balboa Pavilion has been the center of Newport Harbor activities for 75 years. A seafood restaurant and gift shop are inside the pavilion, which also serves as the terminal for outboard motor glass skiff rental, deep sea fishing boat rental, Catalina Island cruises and Newport Harbor cruises. Information: (714) 673-5245.

• **Balboa Island,** Marine Ave. in Newport Beach. A boardwalk circles the Island, which is in Newport Harbor. There is a bridge on the north side and a ferry is available from Balboa Peninsula. Ferry information: (714) 673-1070.

• **Newport Dunes Aquatic Park,** Bayside Drive in Newport Beach. Swimming, boating, camping, picnicking. Lifeguard.

• **Corona Del Mar State Beach,** Ocean Blvd. and Iris in Corona Del Mar. Swimming, picnicking, volleyball. Lifeguard.

• **Laguna Beach (main beach),** west of end of Broadway, west of Pacific Coast Highway in Laguna Beach. Boardwalk. Swimming, playground, basketball and volleyball courts. Lifeguard.

• Malibu Surfrider State Beach, 23200 block of Pacific Coast Highway. Swimming, diving, fishing. Lifeguard. Malibu Pier was closed at press time for repairs for damage caused by storms. Information: (213) 456-8030.

Places Abound To Retreat

(Continued from Preview/39)

soon became a popular rest stop for travelers to the growing pueblo of Los Angeles.

A hospice for overnight guests kept expanding as the number of visitors grew, and this "long building" still contains a number of artifacts — including a wine press and furniture of the period — and many of its rooms are intact. The small, narrow church has been restored and contains a large organ and an unusual mirror-backed altar.

The Mission San Fernando is open Monday through Saturday from 9 a.m. to 5 p.m.

The last stop on the local mission trail is the **Mission San Buenaventura** in Ventura. The city, one of the state's oldest, was originally a Chumash Indian settlement. The mission here, founded in 1782, was exceptionally prosperous. A reservoir and seven-mile aqueduct were built to transport water to the mission's vast grain fields.

Today on E. Main St., a small part of the mission's original holdings is still intact, including a museum with a small display of artifacts and a church. Here are the remains of two ancient wooden bells, perhaps the only ones of this kind in California, and an old olive crusher. The grounds are open from 10 a.m. to 5 p.m.

On May 18th, *Computerworld* launches its first communications satellite . . .

COMPUTERWORLD
On Communications

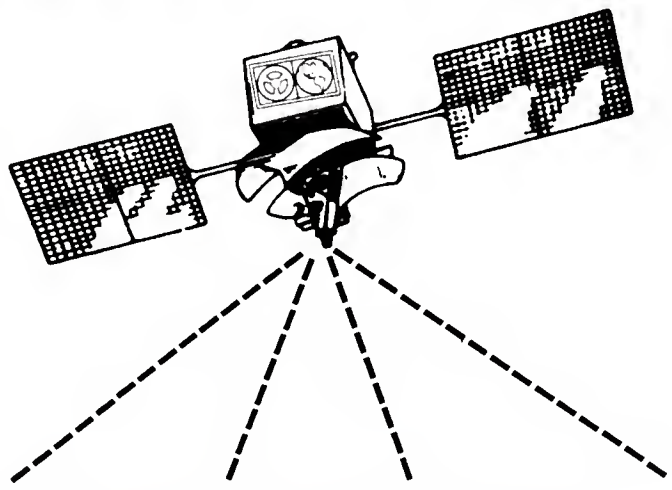
We are launching a new publication devoted to in-depth coverage of the broad spectrum of voice, image and data communications. *Computerworld On Communications* will examine communications issues, technology and applications from a systems perspective.

We recently did a study of *Computerworld* subscribers to determine their level of involvement and interest in communications. Of the 84% now using or planning to use communications equipment and services, 72% are personally involved in its selection and/or implementation. We found that these subscribers depend on *Computerworld* for communications information and prefer its coverage by more than 4 to 1 over the next publication in the field. This segment of our audience has a critical need for in-depth information on the constantly changing technology of communications.

As *Computerworld* expands its weekly news coverage of communications with interpretive information on products, equipment and services, *Computerworld On Communications* will complement that coverage with focused attention on the broader issues facing business communications users.

Computerworld On Communications will keep readers current on changing trends in the design, acquisition, operation, and optimization of corporate communications facilities. It will look at communications and networks from a systems perspective that relates technical capabilities with corporate goals.

In the two issues for 1983, *Computerworld On Communications* will apply the proven editorial resources of *Computerworld* to the area of communications networks. It will look at the implications of enhanced communications within the business organization together with the impact on established systems operations.



So, if you're among the majority of *Computerworld* subscribers who are personally involved in the selection and implementation of communications equipment and services for their organization, you'll find *Computerworld On Communications* a valuable addition to the *Computerworld* family of special publications.

As a Computerworld subscriber, you will automatically receive the two 1983 issues of *Computerworld On Communications* as part of your subscription. If you're not already subscribing to *Computerworld*, call *toll free* 800-343-5730.

Remember to look for *Computerworld On Communications* on May 18th and again on September 28th.

For advertising information on *Computerworld On Communications*, call Bill Dwyer, National Accounts Manager at (617) 879-0700 or your local *Computerworld* sales representative.

Premier Issue: May 18th

Boston/Chris Lee, Ed Marecki, Joe Fitzhugh, Jim McClure, Kathy Doyle, Diane Sukey, *(617) 879-0700*
Chicago/Art Kossack, Newt Barrett, Jean F. Broderick, Chris Lee, *(312) 827-4433*
New York/Mike Masters, Doug Cheney, Ray Corbin, Joan Daly, Fred LoSapio, Gale M. Paterno, *(201) 967-1350*
Atlanta/Jeffrey Melnick, Mike Masters, *(404) 394-0758*
San Francisco/Bill Healey, Barry Milione, A. G. Germano, Theodora Franson, Ruth Gordon, Eileen Dunn, *(415) 421-7330*
Los Angeles/Jim Richardson, Bob Hubbard, Beverly Raus, *(714) 556-6480*

Software

Cincom Systems, Inc.

Cincom Systems, Inc. will exhibit its complete line of data base/data communications and applications products and services at Booth P7852.

Booth highlights will include demonstrations of Cincom's TIS, an integrated data base technology priced from $150,000; Mantis, an on-line, interactive fourth-generation application development system priced from $14,000; and Manufacturing Resource Planning System, a production and inventory control software system said to combine five modules, priced from $65,000, according to a vendor spokeswoman.

Other Cincom products and services that will be exhibited at NCC include:

- Series 80 foundation and facilitative software — Total, Environ/1 and Data Control System — and ENV-Data, T-ASK, Socrates and LMS-II. A minimum configuration costs $180,000, a spokeswoman said.
- Application software — Epoch-FMS, priced at $50,000.

Cincom is located at 2300 Montana Ave., Cincinnati, Ohio 45211.

Cullinet Software, Inc.

Cullinet Software, Inc. will be discussing its recently announced products at Booth S5262.

These include IDMS/R, a new version of its IDMS data base management system that reportedly will combine network and relational architectures in one system; the Information Database, a mainframe-based information data base intended to provide access to mainframe data for personal computer users; and the Cullinet Personal Computer System, a data-base-driven applications software system for IBM Personal Computers, according to a spokesman for Cullinet.

More information can be obtained from Cullinet Software, which is located at 400 Blue Hill Drive, Westwood, Mass. 02090.

Batelle

Batelle will display its Basis text/numeric retrieval software and its Basis/DM relational data base management system at Booth S5576.

Basis runs on a variety of mainframes and minicomputers, including equipment from IBM, Control Data Corp., Sperry Corp. and Digital Equipment Corp. The vendor recently announced its availability on Prime Computer, Inc.'s 50 series and Wang Laboratories, Inc.'s VS series of minis. Basis/DM is scheduled for release in mid-summer 1983.

The central system of the Basis products is priced at $38,000 for the mainframe versions and $26,600 for the minicomputer versions from the vendor at 505 King Ave., Columbus, Ohio 43201.

McCormack & Dodge Corp.

McCormack & Dodge Corp. will be exhibiting the Version 2.0 of its Hilite query system as well as its full line of financial applications software, which runs on IBM and plug-compatible mainframes. at Booths N4302-N4304.

These include G/L Plus, its general ledger system, which ranges in price from $52,000 to $115,000; H/R Plus, the firm's human resource management system, priced between $49,000 and $154,000; A/P Plus, an accounts payable package that costs between $31,000 and $57,500; and F/A Plus, its fixed assets package, which ranges in price between $37,000 and $50,000. Hilite Version 2.0 is priced at $15,000 for the first application and $5,000 per additional application.

McCormack & Dodge is headquartered at 500 Hillside Ave., Needham, Mass. 02194.

Digital Equipment Corporation
Application Products Group
cordially invites
National Computer Conference attendees
to attend a
Seminar and Lecture
by Dr. David Whiteside
on his evaluations of PRO IV
and other fourth generation languages
in the Cornwall North room
Sheraton Anaheim
1015 West Ball Road
Anaheim, California
Wednesday, May 18, 1983
at 4:00 p.m.

Fourth generation languages such as PRO IV allow people with little or no computer training to write programs or develop specific applications.

PRO IV is a productivity tool used to define the characteristics of a data processing job. Its easy-to-use menus and "fill-in-the-blank" formats eliminate the requirement that a user learn a traditional computer programming language.

PRO IV is available on all Digital Equipment Corporation PDP-11 computer systems that run the RSTS/E, RSX-11M, and RSX-11M-Plus operating systems.

digital

When you attend
NCC...
look for the blimp to lead you to the



TECHNICAL CAREER JOB FAIR® ...the original

held simultaneously nearby
NCC
NATIONAL COMPUTER CONFERENCE

Over 50 leading hiring corporations looking for advanced professional-level computer personnel, and engineers, will sponsor booths at this special Technical Career Job Fair held simultaneously near NCC.

Two Days Only!
SHERATON ANAHEIM HOTEL
Monday, May 16 • Tuesday, May 17
11 AM to 9 PM Both Days

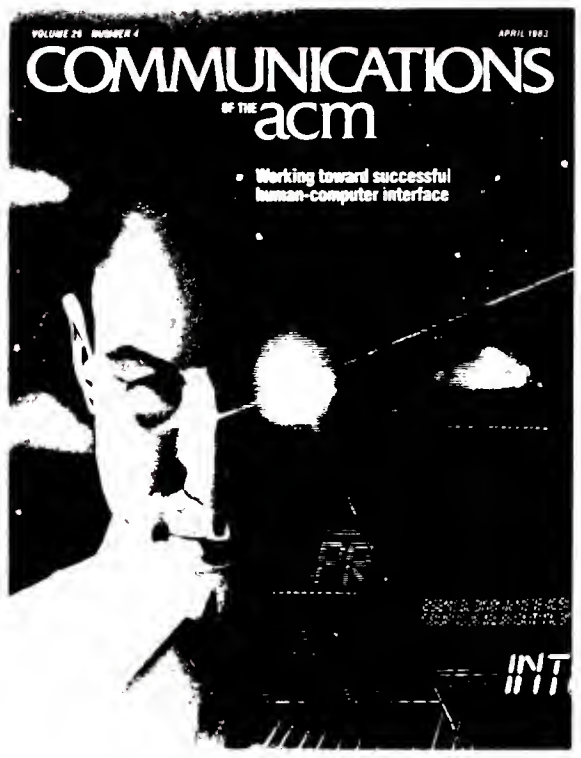


bpi
Sponsored nationally by BPI
100 North 7th St., Minneapolis, MN 55403
"We are not an employment agency"

Toll Free: 1-800-328-4032

See our ads on pages 55, 57 and 59.

ANOTHER GOOD REASON TO JOIN ACM: THE "NEW" COMMUNICATIONS



- more application articles
- more articles on ***"Social Impacts of Computing"***
- a new department containing ***Case Studies***
- a new feature—***from Washington***
- enhanced design and graphics

Membership includes a free subscription to ***Communications***.

Mail in this application and you'll receive free, as a bonus, our 152-page special issue of ***Computing Surveys*** on Database Management Systems, which sells separately for $14.

Just fill in your name and address. Circle the appropriate dues and rates for any additional subscriptions or Special Interest Group (SIG) memberships (SIG membership includes a Newsletter subscription). Total all your circled amounts. Mail your application with payment to: ACM Inc., P.O. Box 12114, Church Street Station, New York, NY 10249.

ACM Membership Application

SEND TO:

Association for Computing Machinery
P.O. Box 12114
Church Street Station
New York, NY 10249

Name _____

_____

Address _____

_____

City/State/ZIP _____

_____

V

SPECIAL INTEREST GROUPS (SIGs)

SIGACT (Automata & Computability Theory) 001	$ 2.50	**SIGIR** (Information Retrieval) 016	6.00
SIGAPL (APL) 032	10.00	**SIGMAP** (Mathematical Programming) 018	10.00
SIGARCH (Computer Architecture) 002	20.00	**SIGMETRICS** (Measurement & Evaluation) 019	9.00
SIGART (Artificial Intelligence) 003	10.00	**SIGMICRO** (Microprogramming) 020	10.00
SIGBOP (Bus Data Process & Mgmt) 004	7.50	**SIGMOD** (Management of Data) 014	3.00
SIGBIO (Biomedical Computing) 005	14.00	**SIGNUM** (Numerical Mathematics) 021	11.00
SIGCAPH (Computers & Physically Handicapped. Print) 006	10.00	**SIGOA** (Office Automation) 027	7.50
SIGCAPH (Cassette Edition) 029	10.00	**SIGOPS** (Operating Systems) 022	8.00
SIGCAPH (Both Print & Cassette) 030	14.00	**SIGPC** (Personal Computing) 035	7.00
SIGCAS (Computers & Society) 007	8.00	**SIGPLAN** (Programming Languages) 023	22.00
SIGCHI (Computer & Human Interaction) 026	10.00	**SIGPLAN-AdaTEC** (Tech Comm on Ada) 037	15.00
SIGCOMM (Data Communication) 008	12.00	**SIGPLAN-FORTEC** (Tech Comm on Fortran) 038	6.00
SIGCPR (Computer Personnel Research) 010	8.00	**SIGSAC** (Security, Audit & Control) 036	12.00
SIGCSE (Computer Science Education) 011	11.00	**SIGSAM** (Symbolic & Algebraic Manipulation) 024	7.50
SIGCUE (Computer Uses in Education) 012	10.00	**SIGSIM** (Simulation) 025	5.00
SIGDA (Design Automation) 013	3.00	**SIGSMALL** (Small Computing Systems and Applications) 031	9.00
SIGDOC (Documentation) 033	12.00	**SIGSOFT** (Software Engineering) 034	6.00
SIGGRAPH (Computer Graphics) 015	10.00	**SIGUCCS** (University and College Computing Services) 028	10.00

MEMBER CLASSES

Voting Member: You must a) subscribe to the purposes of ACM; b) have attained professional stature as demonstrated by intellectual competence and ethical conduct in the arts and sciences of information processing; and c) have earned a Bachelor's Degree or academic equivalent, or have 4 years full time experience in information processing. A Voting Member may vote and hold office in ACM.

Associate Member: You must subscribe to the purposes of ACM. Associate Members have the same privileges and benefits as Voting Members except the right to vote and hold office.

Student Member: Please write or call ACM Headquarters for a Student Membership Application: 11 W. 42nd Street., NY NY 10036, (212) 869-7440.

DUES & CERTIFICATION

Voting/Associate Members	$40.00
Members of IEEE-CS (receive a $5 discount)	35.00
Members of the following overseas computing societies, ACS, AICA, BCS, CIPS, HKCS, IPA, NGI (receive an $8 discount). Overseas residents: See "Notes" section	32.00

The applicant for Voting Membership must statisfy *at least one* of the following requirements:

1. Bachelor's Degree. Institution: _____

2. Equivalent level of education. Institution: _____

_____

3. 4 full time years of experience (attach statement).

I attest the above is correct. _____
SIGNATURE

PUBLICATIONS

Computing Surveys (quarterly) 103	$10.00
Journal of the ACM (quarterly) 102	10.00
Computing Reviews (monthly) 104	16.00
Collected Algorithms, Initial Vols. I, II, III & 1 yr's quarterly updating supplements 105	75.00
Transactions (all quarterlies)	
Mathematical Software/TOMS 108	18.00
Database Systems/TODS 109	18.00
Programming Languages and Systems/TOPLAS 110	18.00
Graphics/TOG 112	24.00
Office Information Systems/TOOIS	20.00
Computer Systems/TOCS	20.00

PURPOSES OF ACM & SIGNATURE

1. To advance the sciences and arts of information processing including, but not restricted to, the study, design, development, construction, and application of modern technology, computing techniques and appropriate languages for general information processing, storage, retrieval, transmission/communication, and processing of data of all kinds, and for the automatic control and simulation of processes.

2. To promote the free interchange of information about the sciences and arts of information processing both among specialists and the public in the best scientific and professional tradition.

3. To develop and maintain the integrity and competence of individuals engaged in the practice of information processing.

I hereby affirm that I subscribe to the purposes of ACM (as indicated above) and understand that my membership is not transferable. I enclose a check, bank draft or money order in the full amount.

SIGNATURE DATE

If you are a member of any of the computing societies listed in the Dues section, please sign below, indicate your affiliation and member number.

SIGNATURE AFFILIATION MEMBER #

Only one discount is permitted.

PAYMENT INFORMATION

Payments must accompany application. Please make checks payable to ACM Inc., and mail this application to: ACM, P.O. Box 12114, Church Street Station, New York NY 10249.

Total Amount: $_____

Notes:

Overseas Members: If you'd like to join ACM please write ACM Headquarters for an Overseas Membership Application. Mention this issue of *Computerworld* and you'll still receive a free book.

FOR OFFICE USE ONLY

Member No	St Cntry	Zip Code/City	T/C	R/C	M/C

Association for Computing Machinery
11 West 42nd Street, New York, NY 10036
(212) 869-7440 • Telex: 421686

CUT APPLICATION ALONG DOTTED LINE

United Software Systems And Services Corp.

United Software Systems and Services Corp. will introduce Clio, a data base management system, at Booth P7904. All Clio functions were designed to operate as a global system, the vendor said.

The package includes a virtual space architecture that provides an infinite and logical view of data, permits change or additions to occur online without modification of existing data or programs, speeds application development and provides more flexible access and response for end users, a spokesman said.

Clio permits specification of a variety of data relationships including hierarchical, network, relational, inverted files and qualifiers. Users do not need to know how data is structured, formatted or stored, the spokesman said. Add, delete and modify functions can be used in query mode without having to reorganize the data base.

Clio runs on most IBM mainframes, including 360, 370, 4300 series and 30 series under IBM's DOS, OS or VM/CMS operating systems.

The purchase price ranges from $70,000 to $80,000 with two- and three-year leases available. The company is located at Suite 1136, 1801 Ave. of the Stars, Los Angeles, Calif. 90067.

Oracle Corp.

Oracle Corp. will be showing both mainframe and microcomputer versions of its Oracle relational data base management system at Booths D2232 and D2234..

Oracle offers multiuser capabilities, software development tools and automatic recovery from system failures in batch or on-line environments, according to a vendor spokesman for the firm.

The package costs from $12,000 for minicomputers and mainframes.

A specialized version of Oracle for microcomputers costs $600.

Oracle Corp. is located at 3000 Sand Hill Road, Menlo Park, Calif. 94025.

Arthur Andersen & Co.

Arthur Andersen & Co. will be showing and demonstrating its manufacturing planning and control system as well as its information system methodology at Booth D0104.

MAC-PAC/38 is an integrated on-line manufacturing resource planning and control system written in RPG for the IBM System/38.

It features independent modules designed to enable companies to implement applications as they are needed or to install the entire system in phases.

The modules are individually priced between $4,000 and $6,000. The entire system, including all 10 software modules, is available for $50,000.

Method/1 is the firm's project management and systems development methodology.

These packages incorporate a "top-down" and "bottom-up" strategy approach to developing corporate data models and project models, a vendor spokesman said..

It is available for $35,000, according to the vendor spokesman.

Arthur Andersen is headquartered at 69 W. Washington St., Chicago, Ill. 60602.

Management Science America, Inc.

Management Science America, Inc. (MSA) will be showing its microcomputer-mainframe interface, which has been installed in user sites, at Booths 6049-6053.

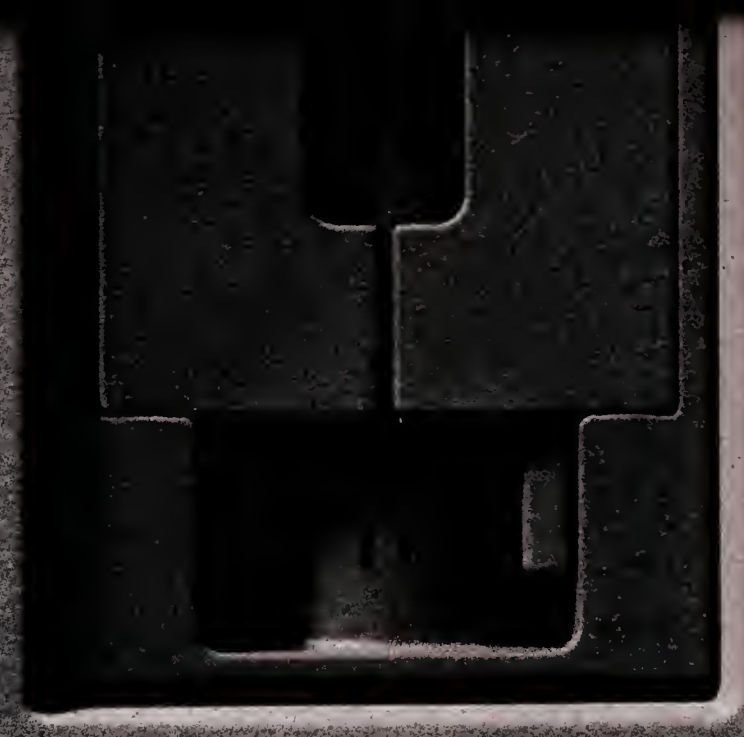
The software allows users of the IBM Personal Computer and micros running under Digital Research, Inc.'s CP/M to download and analyze mainframe data developed by MSA's applications systems. The software component of the system is a variety of packages from Peachtree, Inc. called Executive Peachpak.

Peachlink is the software component designed to allow the downloading of data from the mainframe to the microcomputer.

The other components are Business Graphics, Peachcalc, Peachtext. Telecommunications and List Manager.

Executive Peachpak reportedly is available with all MSA mainframe software systems and is priced at $3,750 from 3445 Peachtree Road, Atlanta, Ga. 30326.





Digital's new multi-user, multi-tasking Micro/PDP-11 gives you all the microcomputer you need to solve your application problems. At a price almost anyone can afford – $9,200.*

The Micro/PDP-11 is a powerful micro that's small enough to fit just about anywhere. It's available in rack mount, floor mount, and table top versions. And includes CPU, a 10 Mb 5¼" Winchester, 800 Kb floppy back-up, and auto-self diagnostics for I/O, CPU and mass storage.



But what puts the Micro/PDP-11 in front of all the others is what's behind it.

More software. Over 2,000 developed applications are available for laboratories, factories, offices, and other businesses. And thousands of PDP-11 trained programmers ready to write even more.

A wide choice of operating systems. Including RSX-11, RSTS/E, RT-11, DSM-11, MicroPower/Pascal, and UNIX.**

A variety of languages such as BASIC, FORTRAN-77, COBOL-81, C, DATATRIEVE, PASCAL and DIBOL.

Thousands of peripheral hardware interface products.

And the support of Digital's worldwide team of over 18,000 sales and service professionals. Ready to answer any question. Or solve any problem.

The Micro/PDP-11.

No other micro can stand up to it.

For more information, send in the coupon. Or call **800-225-9222** and ask for information package CW-127. In MA, HI, AK and CANADA, call (617) 568-5707.

Send to: **Digital Equipment Corporation**, HL2-1/E10
77 Reed Road, Hudson, MA 01749.

☐ Please send me more information on Digital's Micro/PDP-11.

☐ Please have a Digital Sales Representative contact me.

My application is _____

Name _____

Title _____

Company _____

Street _____

City _____ State _____ Zip _____

Phone _____

CW-5-9-83

More than a micro.

*Quantity one, U.S. Prices only

**UNIX is a trademark of Bell Laboratories. ©Digital Equipment Corporation 1983.

digital

Actual size: 5¼" x 19"

No other micro can stand up to the Micro/PDP-11.



Westinghouse Electric Corp.



Westinghouse Electric Corp. will be exhibiting the following products at Booths P7134-P7136.

- Visual Aids, a series of on-line utilities to aid programmers in maintaining and tuning IBM DOS/VSE systems, priced at $3,000 for DOS/VSE and $4,000 for CICS.
- Spoolprint, an on-line utility for routing individual entries in the spooler list queue to any printer in the teleprocessing network, priced at $3,000 for DOS/VSE and $4,000 for CICS.
- Mailtronic, an electronic mail package that includes full-screen input/update, priced at $6,375 for DOS/VSE and $7,000 for CICS.

Products for direct-access storage devices (Dasd) include:

- Disk Utility System, a set of programs for backup/restore/copy services in DOS/VSE or DOS-compatible environments, priced at $3,000.
- Disk Space Manager, a set of system interfaces and supporting utility programs for automatic space management of Dasds, priced at $5,000.
- Westoc, which produces a volume table of contents of any disk pack, priced at $800. The Job Monitor II job accounting package provides utilization reports at a purchase price of $3,500 for DOS and DOS/VSE.

APT/VSE is a language that translates numerical control programs on an in-house DOS/VSE system. It costs $30,000.

Productivity aids on display include:

- Scepter, an on-line programming system priced at $5,000 for DOS and DOS/VSE. The enhanced Scepter Plus costs $5,500; Scepter CICS is priced at $6,000.

Teleprocessing products will include:

- Westi, an independent teleprocessing monitor with user-tailoring features, priced at $15,000 for a local configuration and $19,000 for a remote configuration.

The company is located at 2040 Ardmore Blvd., Pittsburgh, Pa. 15221.

Holland Automation

Holland Automation will be showing its Sales Order Processing module for the IBM Personal Computer and systems using Digital Research, Inc.'s CP/M operating system at Booths P7406-P7408.

Features of the package include integration with inventory, receivables, general ledger and sales analysis.

The Sales Order Processing module costs $695, the vendor said from 3400-D, W. McArthur Blvd., Santa Ana, Calif. 92704.

THE COMPLETE BRANCH OFFICE

- ☑ Luxuriously furnished
- ☑ Prestigious address
- ☑ Completely staffed
- ☑ Short term agreement
- ☑ Fully equipped
- ☑ No capital investment

All included when you lease from OmniOffices.

Atlanta (404) 256-0009
Houston (713) 965-0060
Chicago (312) 843-2500
New York (212) 867-5750
Dallas (214) 233-6664
San Francisco (415) 391-8810
Denver (303) 770-1000
Washington, D.C. (703) 821-8950

Or write for brochure:
S. Wilson, Leasing Manager
OmniOffices, Inc.
5775-E Peachtree Dunwoody Rd., NE
Atlanta, GA 30342

OMNIOFFICES



A simple analogy that explains why Plexus

The division of labor.

A very simple idea that says when you divide a job up among a lot of people or machines, the job goes faster.

In our case, this principle translates to a multiprocessor architecture, up to seven, to be exact.

And that's the reason our family of four UNIX™-based systems will get you where you want to go. Very quickly.

Multiprocessors. No waiting.

Most commercial UNIX-based systems being peddled these days rely on a single processor to do everything. No wonder they drag their feet as system loading increases.

Not us. We're all speed. All the time.

We distributed the UNIX operating system to where it does the most good.

Our 16-bit Intelligent Communications Processors rush terminal I/O to and from as many as 40 users. While also taking care of low level communications so as not to interrupt the CPU.

Our 16-bit Mass Storage Processors handle disk I/O chores. So you get fast disk access and can keep data bases and important files easily accessible.

The performance that results is close to that of a VAX™ 11/780.

And costs about $200,000 less.

The Plexus Family. Speedsters all.

There's our Z8000 series, the economical 16-user P/25, or the 40-user P/40.

Or choose the newly introduced P/35 or P/60 models for 32-bit performance.

They're both based on the 12.5 MHz MC68000. With the addition of a few, shall we say, high performance modifications.

Like an on-board 4K cache memory. 16K of high-speed on-board RAM. A high-speed memory map. And a 32-bit memory path.

SAS Institute

At Booth W6530, SAS Institute will announce FScalc, a new procedure in SAS/FSP (Full-Screen Product) and SAS/OR, an operations research tool for business planning and scheduling. Both products run on IBM 370, 30 series and 4300 series computers in batch under IBM OS, DOS/VSE and SSX operating systems and interactively under IBM's TSO, VM/CMS and ICCF.

FScalc is an electronic spreadsheet for financial modeling and analysis, which offers capabilities to perform "what if" analyses and financial analyses of new products and mortgage schedules.

The package includes an on-line Help facility; unlimited spreadsheet size; a modeling language that supports most features of the SAS Data step; the use of color to highlight protected and unprotected fields; the ability to define names for row and columns and descriptions of rows; and varying column lengths.

FScalc is available to current SAS/FSP users at no additional charge. The charge for SAS/FSP is $3,600 for the first year and $1,800 for each year thereafter.

SAS/OR offers procedures for linear programming and critical path method; general assignment problems; determining minimum cost flow through a network, maximum flow and shortest path; and determining the quantity of goods to be shipped from supply points to demand points. It will be available to SAS customers for $3,000 for the first year, $1,500 for each additional year.

SAS can be reached through Box 8000, SAS Circle, Cary, N.C. 27511.

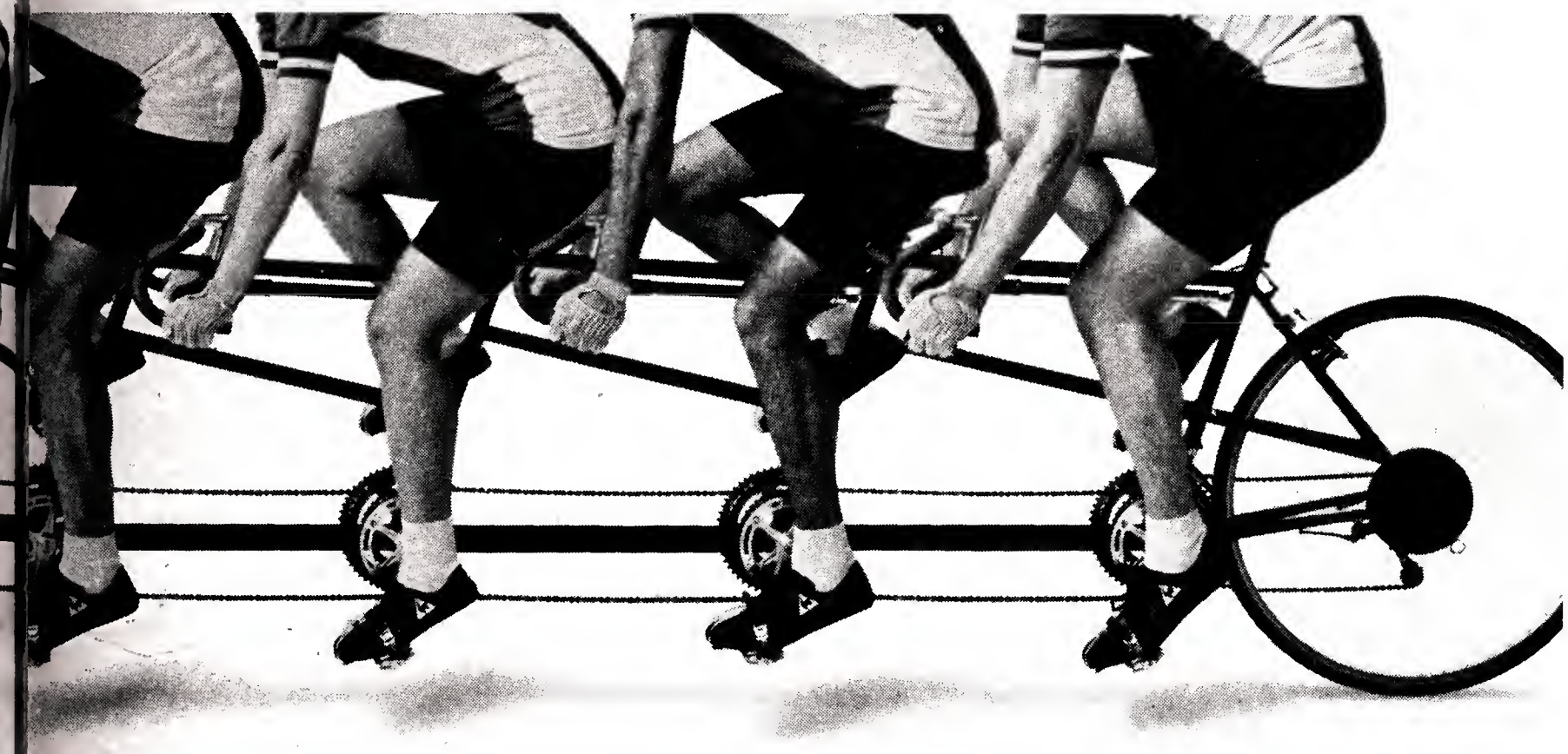
Smoke Signal Broadcasting

At Booth P7047, Smoke Signal Broadcasting will introduce a family of integrated packages developed by United Software Co. for its OS-9 operating system. The software will be running on the firm's Chieftain multiuser computer system.

Total Management Planning (TMP) software packages include TMP/Manager, a structured data base manager priced at $300; TMP/Calc, a spreadsheet package that is said to eliminate wraparound, priced at $250; TMP/Freeform, an "electronic index card" package, priced at $150; and TMP/Front End, which integrates other TMP packages and links the system with word processors, Basic, Cobol and other high-level languages, available at no charge.

Chieftain can run six users simultaneously for a cost of $16,995, a spokesman said. The price includes six terminals, one serial printer, 20M bytes storage area, 20M bytes of tape streamer backup and the ability to expand to 12 users for about the cost of adding dumb terminals.

Smoke Signal is located at 31336 Via Colinas, Westlake Village, Calif. 91362.



has the fastest Unix-based systems.

All of which help boost performance even further. Giving your system enough stamina to run multi-user applications at full speed all day long.

Plus more standards as standard equipment.

There are times when performance isn't everything. There's growth, too.

That's why we've included the MULTIBUS® standard for board-level expansion.

Plenty of serial RS232C ports for terminals of all kinds.

And standard software packages like COBOL, Pascal, BASIC, and C. Plus access to hundreds of third party UNIX packages.

We're right behind you.

No one, but no one, supports UNIX and you as completely as we do.

You'll get full software engineering support, UNIX software maintenance, and even a software referral service for all your OEM programs.

Plus a field engineering force that can help you take the lead in your field, no matter what it is.

Want a race?

Come run a benchmark on one of our Plexus systems. To set one up, just call 408-988-1755, or write us at: Plexus, 2230 Martin Avenue, Santa Clara, CA 95050.

You'll see a performance feat no other commercial UNIX-based system can match. Which is understandable. We go so fast because we've got more going for us.

PLEXUS
Built for speed.

Don't miss the performance. See the Plexus systems and our OEM Software Showcase at NCC Booth S-5384 in the Convention Center.

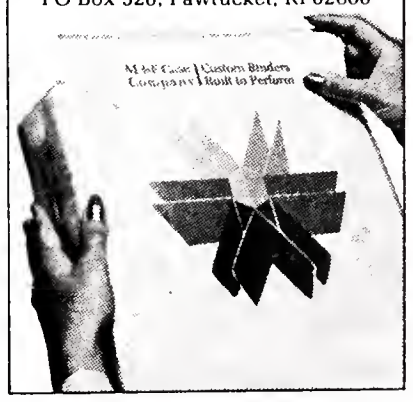
VAX is a trademark of Digital Equipment Corporation. UNIX is a trademark of Bell Laboratories. MULTIBUS is a registered trademark of Intel Corporation.

Custom View Binders for software documentation plus diskette storage

Also available, fully customized in many styles, sizes and colors with imprinting and index tabs.

For more information, or the sales representative in your area, call toll-free 800-343-8820.

M+F Case Co.
PO Box 520, Pawtucket, RI 02860





TIRED OF PLAYING GAMES AT COMPUTER SHOWS?

Sign up now for EMCE — The First Microcomputer Conference & Exposition that's as serious about personal computing as you are.

EMCE™

Executive Microcomputer Conference & Exposition

June 23-25, 1983

Sheraton Centre, New York, New York





EMCE gives you a complete conference program and exhibition:

- 48 conference sessions
- 3 days of exhibitions
- Hardware/Software selection
- Micros in smaller businesses
- Financial application
- Special program of personalized instruction
- Future trends
- And much more!

The Executive Microcomputer Conference and Exposition (EMCE) is sponsored by the Conference Management Group of CW Communications/Inc., publishers of *Computerworld, InfoWorld, ISO WORLD,* and *PC World.*

If you want to learn how to select and use the microcomputing products and services that are revolutionizing business . . .

If you're tired of micro shows heavy on video games, but light on the serious applications you need to succeed . . .

EMCE is for you!

It's designed especially for executives who are responsible for the selection or use of micros in their organizations, executives who use micros as decision support tools, and business managers who employ (or want to employ) micros to manage their businesses.

The Conference Program

Thursday, June 23 & Friday, June 24

The Thursday and Friday conference program is divided into four major "tracks," but you are not required to sign up for a particular group of sessions. You may select the sessions you need from any of the 48 sessions available and create a conference program designed to suit your unique information needs. You may even choose to attend one day instead of two if you want. A detailed agenda will be sent to you prior to the conference for your advance planning, so you don't waste a minute!

Special General Session for Thursday Attendees:

The Revolt of the Masses: Micros and the Changing Role of DP. *(5:00-6:00 p.m.)*
Dr. Michael Hammer, President, Hammer & Company

1. Personal Computing in a Corporate Environment

For Executives in large corporations who are involved in using micros in distributed data processing or as standalone executive workstations, the EMCE conference program includes:

Keynote: Increasing Corporate Productivity via the Personal Computer *(Thurs., 9:00-10:00 a.m.)*
Mayford Roark, Executive Director of Systems, Ford Motor Company

The Executive/Professional Workstation *(Thurs., 10:00-11:00 a.m.)*
Evelyn Wilk, Consultant, Arthur Andersen & Co.

DDP with Microcomputers *(Thurs., 2:00-3:30 p.m.)*
Moderator: Jerrold Eisen, President, Office Sciences International
Panelists: Phil Dixon, MIS Manager, Apple Computer; Robert A. Miller, Special Assistant to the Deputy Secretary of Treasury, U.S. Treasury Department

The Information Resource Center *(Friday, 3:45-5:15 p.m.)*
Moderator: Thomas Kosnick, Researcher, Stanford Business School;
Panelist: Alan Gross, Director of Systems, International Paper Company

The Role of Apple and IBM in Corporate Computing *(Friday, 3:45-5:00 p.m.)*
[illegible], Publisher, "PC World"

New Issues of Confidentiality and Security in Organizational Information Processing *(Friday, 9:00-10:00 a.m.)*
Professor Alan F. Westin, Columbia University

Personal Computer Acquisition and Implementation Strategies *(Friday, 10:00-11:00 a.m.)*
Don L. Eddy, Principal, Office Futures Now, Inc.

Compatible Systems and Software for the IBM PC *(Friday, 2:00-3:30 p.m.)*
Moderator: Steve Cook, Technical Editor, "PC World"
Panelists: Chris Larson, Product Marketing Manager, MS/DOS, MicroSoft; Steve Flannigan, VP Software, Compaq Computer Corp.

2. Introduction to Microcomputing and its Applications

For Executives who are concerned with the selection and use of microcomputers primarily in smaller businesses, the EMCE conference highlights:

Keynote: The Personal Computer: The Mouse that Roared! *(Thurs., 9:00-10:00 a.m.)*
Lew Kornfeld, Director, Tandy Corporation

How to Buy a Personal Computer *(Thurs., 10:00-11:00 a.m.)*
Lawrence Govoni, Director, Govoni Microcomputer Training School, Boston, MA

Spread Sheet/Financial Applications *(Thurs., 2:00-3:30 p.m.)*
Moderator: Hannah Blank, Vice President-MIS, Chase Manhattan Bank
Panelists: Seneel Kelkar, Mktg. Mgr., Standalone Products, VisiCorp; Russell Warner, Product Mktg. Mgr., Enduser Products, MicroSoft

New and Future Trends in Personal Computing *(Thurs., 3:45-5:00 p.m.)*
John C. Dvorak, Editor, "InfoWorld"

Word Processing Packages for Personal Computers *(Friday, 9:00-10:00 a.m.)*
Susan Harmon, President, Transitions

DBMS on Personal Computers *(Friday, 10:00-11:00 a.m.)*
Adam Green, President, SoftwareBanc

A Look at Integrated Software Packages *(Friday, 2:00-3:30 p.m.)*
Moderator: Dan Coursey, Sr. Market Analyst, International Data Corporation
Panelists: Chris Morgan, VP, Communications, Lotus Development Corp.; Brian Fischer, Sr. Vice President, Context Management Corp.; Roy Folk, OEM Customer Mktg. Mgr., VisiCorp

Panel: Executive Personal Computer Success *(Friday, 3:45-5:15 p.m.)*
Moderator: Alan Sneider, Partner, Laventhol & Horwath

3. Technological Developments in Personal Computing

For Executives who wish to keep up with changing microcomputer technologies in mass storage, business graphics, operating systems, and more, the EMCE conference highlights:

Keynote: The Future of Personal Computer Software for Business *(Thurs., 9:00-10:00 a.m.)*
Dan Fylstra, Chairman, VisiCorp

What's New in Peripherals *(Thurs., 10:00-11:00 a.m.)*
Peter Burgess, President, Burgess Management Associates

Developments in Personal Computer Business Graphics *(Thurs., 2:00-3:30 p.m.)*
Moderator: Dave Needle, Sr. Writer, "InfoWorld"

Developments in Mass Storage Capabilities *(Thurs., 3:45-5:00 p.m.)*
Moderator: Will Zachmann, VP, Office of Technology Assessment, International Data Corporation

Utilities *(Friday, 10:00-11:00 a.m.)*
Haines Gaffner, President, LINK

Popular Programming Languages *(Friday, 10:00-11:00 a.m.)*
Gordon Eubanks, Vice President, Commercial Systems Division, Digital Research, Inc.

Operating System Selection: 8 to 16 Bit *(Friday, 2:00-3:30 p.m.)*
Moderator: Maggie Canon, Editor-in-Chief, "InfoWorld"
Panelists: Gordon Eubanks, VP-Commercial Systems, DRI; Jean Yates, President, Yates Ventures; Mark Ursino, OS Marketing Mgr., Microsoft Inc.; Natalie Shuttleworth, Manager of OS Mktg., Apple Computer

Developments in Networking *(Friday, 3:45-5:15 p.m.)*
Moderator: Will Zachmann, VP, Office of Technology Assessment, International Data Corporation
Panelists: Mark Stallman, Dir., Mktg. Development, General Instrument Corp.; Art Simon, Director of Mktg., Commercial Services, Warner-Amex Cable Communications Inc.

4. Microcomputer Market Opportunities

For Entrepreneurs, Dealers, Distributors and Systems Houses, we'll offer sales and venture capital strategies you won't want to miss. Session highlights include:

Keynote: Retail Opportunities in the Personal Computer Marketplace *(Thurs., 9:00-10:00 a.m.)*
James Finke, President, Internetworx, Inc.

Software Packaging and Distribution *(Thurs., 10:00-11:00 a.m.)*
Will Loudon, Director of Marketing and Retail Communications, Micropro International

Raising Venture Capital for Software and R&D *(Thurs., 2:00-3:30 p.m.)*
Moderator: Jim Furneaux, Partner, L.F. Rothschild, Unterberg, & Towbin

Legal Issues for the Retail Distributor *(Thurs., 3:45-5:00 p.m.)*
Walter Klasson, Brown, Raysman & Millstein

Market Update: Competition from Japan *(Friday, 10:00-11:00 a.m.)*
Robert C. Wood, President, Robert Chapman Wood Company

Successful Training Strategies for Vendors and End Users *(Friday, 2:00-3:30 p.m.)*
Sue Cornwall, NEC Information Systems; Stephanie Rosenbaum, President, Tec-Ed

Delivering Good Maintenance, Service & Support *(Friday, 3:45-5:15 p.m.)*
John Harnett, Director of Planning and Development, TRW Customer Service Division

Selling the Corporate Account: Problems & Pitfalls *(Friday, 9:00-10:00 a.m.)*

Special Program for Educators

Saturday, June 25

Co-sponsored by T.H.E. Journal

For Educators and Administrators, EMCE will hold a special seminar on Saturday, June 25th entitled Microcomputers in Education and which includes the following sessions designed to suit the unique needs of education:

Keynote: Computer Assisted Instruction in Education *(8:30-9:30 a.m.)*
Dr. Sylvia Charp, Editor-in-Chief, T.H.E. Journal

Computer Funding and Acquisition *(9:30-10:30 a.m.)*
Ann Cullather, Education Legislation & Technology, Washington, D.C.

Logo: An Educational Language *(10:45-11:45 a.m.)*
Richard Carter, Director, Educational Laboratories, Lesley College

Teacher Training *(1:15-2:15 p.m.)*
Kevin Dwyer, Training Director, Unicom

Administrative Applications for Educational Institutions *(2:15-3:15 p.m.)*
Patricia Carter, Computer Applications Specialist, MASBO CoOp

Educational Computing at Home *(3:30-5:00 p.m.)*
Moderator: Scott Mace, Sr. Editor, "InfoWorld"
Panelists: Ken Komoski, Executive Director, Educational Products Information Exchange Institute; Richard Robinson, President, Scholastic Inc.

Special Hands-On Workshop

Thursday, June 23 & Friday, June 24

In addition to the main conference program, EMCE will offer a two-day Executive Microcomputer Workshop for those professionals who wish to get hands-on experience with an Apple or IBM Personal Computer. The workshop will focus on four specific applications: spreadsheet analysis using VISICALC, data base management using dBase II, graphics and communications. An in-class network will be set-up to demonstrate the communications capabilities of personal computers. The two-day seminar will run concurrently with the EMCE Conference program and will include admission to the exhibits and special feature sessions on Saturday, June 25.

The Executive Microcomputer Workshop will be sponsored by the *Personal Computer Learning Center of New York City* and will be held at the Center, located at 1120 Avenue of the Americas, on Thursday and Friday June 23 & 24th. **Enrollment is limited,** so please register early with your choice of hands-on using either an Apple or an IBM PC.

FREE Feature Sessions for All Saturday Attendees

FREE Special Feature Sessions for all Saturday EMCE attendees (exhibit or conference) will be held Saturday, June 25 from 9:00-1:00 p.m. The sessions will focus on professional applications for micros and starting your own home based business or office, and will also discuss the personal computer's impact on family life, kids and recreation.

1. The Home Office — Basics

Getting Started — Hardware & Where to Buy *(9:00-10:00 a.m.)*
Daniel P. Coursey, Senior Market Analyst, International Data Corp.

Software Applications — Selection & Uses *(10:00-11:00 a.m.)*
David Lamb, Sr. Research Associate, LINK

Setup & The First Six Months *(11:00 a.m.-12:00 noon)*
Paul Conover, President, Praxsys Communications

Programming Languages *(12:00 noon-1:00 p.m.)*
A. Richard Miller, Partner, Miller Microcomputer Services

2. Professional Applications

A Look at Spread Sheet Applications *(9:00-10:00 a.m.)*
Ralph Wagner, President, Microsource/Financial, Inc.

Investment Management Applications for Micro's *(10:00-11:00 a.m.)*
Jon Zonderman, Contributing Editor, "Computer Update"

On-line Data Base Systems *(11:00 a.m.-12:00 noon)*
Steven Sieck, Dir., Electronic Information Program, LINK

Word Processing Packages for Microcomputers *(12:00 noon-1:00 p.m.)*
Ronnie Marshak, Contributing Editor, "The Seybold Report"

3. Home/Family Microworld

Household Management *(9:00-10:00 a.m.)*

Micros for Organizations & Groups *(10:00-11:00 a.m.)*

Home Micro-Based Businesses *(11:00 a.m. - 12:00 noon)*
A. Richard Miller, Partner, Miller Microcomputer Services

Micros: Impact on Family Life, Kids & Recreation *(12:00 noon-1:00 p.m.)*
Dan Oehlsen, Executive Producer, Children's Computer Workshop

Over 100 Professional Exhibits at EMCE

EMCE exhibits offer the latest in business-oriented hardware, software, peripherals, systems, accessories and resources from a wide selection of suppliers including companies like IBM, Digital Equipment Corporation, BASF Systems Corp., Computerland, Addison Wesley, GRID Systems, Micro Systems International, Key Software and Victor Electronics . . . to name just a few. EMCE's designed for you to see, touch and learn what you need to know about micros. **Your conference registration includes complete, 3-day exposition attendance.** Or you can sign up for the exhibits only. If you register in advance, using the form in this ad, you get two bonuses:

1. **Early admission** — only conference registrants and advanced registrants will be admitted to the hall between 11 a.m. and NOON on Thursday and Friday.
2. **$5.00 discount** on admission price at the door.

Register for EMCE now! The Sheraton Centre in New York City is the place; June 23-25, 1983 are the dates. Exposition hours: 11-7, Thursday and Friday; 10-6, Saturday. For more information on the conference and exposition, dial 1-800-225-4698 (In Massachusetts, 617-879-0700) and ask for Louise Myerow.

EMCE™

Executive Microcomputer Conference & Exposition

Conference Registration

Includes Complete Exhibit Admission with 11:00 a.m. early admission privilege

☐ Full Two-Day Conference Registration*	$295
☐ One Day Conference Registration	$195
☐ Thurs. only ☐ Friday only	
☐ Executive Microcomputer Workshop* Thurs. and Friday	$595
Choose one: ☐ Apple ☐ IBM PC	
☐ Micros in Education Sat. June 25	$ 95

*Includes Saturday Special Features Programs

Conference registrants only may register by phone: Call 800-225-4698. In Mass. call collect 617-879-0700 and ask for Louise Myerow.

Registrations Cancelled later than June 15 are subject to a $50.00 service charge. Registration may be transferred at no charge.

EMCE — Sheraton Centre, New York City June 23-25, 1983 EMC3

☐ YES! Register me for EMCE (fill out attached conference form)
☐ YES! Register me for EMCE Exhibit Only (fill out attached exhibit form)
☐ Send Information Only!

Name & Title _____

Company _____

Street/P.O. Box _____

City _____ State _____ Zip Code _____

Telephone ( ) _____

TOTAL $_____ Charge to: ☐ American Express ☐ Check Enclosed ☐ VISA ☐ Bill my company (conference only) ☐ MasterCard ☐ Bill me (conference only)

Exp. date _____ Acct. # _____

Signature _____

Send Form and Payment to: EMCE, Conference Management Group, Box 880, Framingham, MA 01701.

Exhibit Only Registration

SAVE $5 by Registering in Advance and Get Early Admission. (Only Advance registrants will be allowed into show between 11:00 a.m. and NOON on Thursday and Friday)

☐ Advance *Pre-Paid 3 day exhibit* registration $20 ($25 at door)
☐ Advance *Pre-Paid 1 day exhibit* registration $10 ($15 at door)
☐ Thurs. ☐ Friday ☐ Saturday

3-Day Exhibit Registration Includes Special Feature Sessions on Saturday, June 25th from 9:00 a.m. to 1:00 p.m.

You must enclose your check or charge information. We cannot bill you or take your exhibit registration over the phone. Exhibit registration is non-refundable.

Micro Data Base Systems, Inc.

Micro Data Base Systems, Inc. will be displaying its MDBS III data base management system and related products at Booth D408.

MDBS III runs on a variety of microcomputers, including those based on Zilog, Inc. Z80 and Intel Corp. 8080 microprocessors. It ranges in price from $2,250 to $18,000, depending on options and environments.

The MDBS III Query Retrieval System, a data base query system designed to permit ad hoc report generation from any MDBS III data base, is priced from $1,100 to $3,750, depending on particular user options and environments.

Also shown:

- Screen Master, a general-purpose interactive screen-management system for Digital Equipment Corp. PDP-11 minis and Z80-based microcomputers, is priced from about $700 to $1,900.
- Knowledgeman Decision Support System, which runs on DEC PDP-11s and microcomputers, is available for $250 before June 1 and $500 thereafter.

More information is available from International Software Enterprises-USA, Inc.

The firm is located at Suite 400, 85 W. Algonquin Road, Arlington Heights, Ill. 60005.

Reston Publishing

Reston Publishing Co. will be at Booth D0512 demonstrating its Professional Applications Systems Software, a series of application development aids designed to be implemented on the IBM Personal Computer in conjunction with Lotus Development Corp.'s 1-2-3 spreadsheet, graphics and data base management system.

These programs include:

- Executive Assistant Toolkit, which consists of 12 data bases designed to improve time and task management.
- Personal Finance Toolkit, a set of personal financial planning and management tools for tracking day-to-day expenses, future planning and projection.
- Tax Planner Toolkit, which allows the user to use Lotus 1-2-3 to plan and manage personal taxes.

Each Toolkit costs $70 from 11480 Sunset Hills Road, Reston, Va. 22090.

Addison-Wesley Publishing Co.

Addison-Wesley Publishing Co. will be displaying a variety of products from its new Applications Software and Higher Education and General Books divisions at Booth N3716.

Addison-Wesley's new Applications Software Division will exhibit decision support software, including Micro-DSS/Analysis, which runs on the Apple Computer, Inc. Apple II and carries a suggested retail price of $495. Also featured will be Bursar, Equip and Purchase, the firm's initial offerings in its Micro-Education Support System Series. Designed to run on the Radio Shack TRS-80 Model I and III and the Apple II, each package has a suggested list price of $195.

A number of professional resource books will also be shown, including new materials on Ada, Bell Laboratories' Unix and Xerox Corp.'s Smalltalk-80.

The firm's General Books Division will feature *The Business Guide to the Unix System* by Rebecca Thomas, Jean Yates, Sandra Emerson and Joe Campbell (488 pages, $19.95, July 1983); *Teach Yourself Apple Basic* by Peter Mears of the University of Louisville (192 pages, 5¼-in. disk, $34.95, July); and *CP/M And the Personal Computer* by Thomas A. Dwyer and Margot Critchfield (456 pages, $19.95, May).

Addison-Wesley is headquartered in Reading, Mass. 01867.

3270 Users . . .

Get 3278 Features for less than 3178 Prices. . . . from PHAZE

A superior value

IBM announced its 3178 on March 8, 1983. The PHAZE P3278 has been available since November 8, 1982. Our lower cost, more functional 3278/3178 alternative is available **now.** And, at $1545, our coax plug-compatible P3278 will be the star of your add-on and replacement program. That's because PHAZE makes the addition easy. More importantly, you'll get a host of special features not found on theirs. That makes PHAZE a good buy, and a superior value.

Easy to use

The compact, modular P3278 can be installed in less than 60 seconds. Without heavy lifting. Without tools. Easy installation reflects the human engineering features of the unit. Features like an easy-on-the eyes, non-glare screen that tilts and swivels with fingertip command. A thin movable keyboard, with a continuously adjustable angle through the optimum range. And PHAZE meets the tough European human factors requirements.

Extras that don't cost extra

Standard features include an 87-key typewriter keyboard with 24 program function keys, a 12-key numeric keypad, automatic video shutdown, combination security locks, a numeric lock and an audible alarm. The only option to buy is a light pen.

Satisfaction guaranteed

PHAZE makes your purchasing decision risk-free. In addition to our standard 90-day warranty, we offer a 30-day money back guarantee if you're not completely satisfied with our product.

Terrific price. An unusual range of features. Money-back guarantee. And liberal quantity discounts. PHAZE will make you a purchasing legend in your own time. Call us today to place your order or to obtain more information. Ask for H. P. Watson at **(602) 991-6855.**

PHAZE INFORMATION MACHINES CORPORATION

We make the addition easy

PHAZE Information Machines Corporation
7650 East Redfield Road
Scottsdale, Arizona 85260

PHAZE is a registered trademark of PHAZE Information Machines Corporation

IMSL, Inc.

At Booths P7353-P7355, IMSL, Inc. will be showing its recently released Edition 4 of its Twodepep finite element program for Digital Equipment Corp.'s Decsystem-10 and Decsystem-20 mainframes. The firm will also be demonstrating its IMSL Library for Hewlett-Packard Co.'s HP 1000 series processors and its IMSL Math/Protran and Stat/Protran packages for DEC's VAX-11 series processors.

Edition 4 of Twodepep solves time-dependent, steady-state and eigenvalue programs in general two-dimensional regions. The package was designed for use in applications involving elasticity, diffusion, minimal surfaces, potential energy and Schrodinger equations. The package costs $2,000 a year for an initial subscription and $1,500 a year for renewals, the vendor said.

The IMSL Library for the HP 1000 series of processors is a collection of more than 540 Fortran subroutines for statistical problem solving. The package can be used as a building block for developing scientific and engineering applications. The package costs $2,000 a year for an initial subscription and $1,500 for renewals, the vendor said.

The firm's Math/Protran and Stat/Protran programs are compatible with DEC's VAX-11 Fortran compiler and were designed for problem-solving statistical and mathematical applications. Math/Protran costs $3,000 for the first year and $2,000 a year thereafter. Stat/Protran costs $2,500 for the first year and $1,500 thereafter. Both programs are available for $4,500 a year and $3,000 for renewals. The firm is located at 7500 Bellaire Blvd., Houston, Texas 77036.

Mathematica Products Group

Mathematica Products Group (MPG), a division of Mathematica, Inc., will be featuring its Ramis II in Booth P7432.

The fourth-generation language includes data base management, an integrated data dictionary, tabularly and graphics reporting, financial modeling, application management, data maintenance, interactive editing, screen formatting and relational data access.

The basic RAMIS II system ranges in price from $40,000 to $80,000. MPG is located at Box 2392, Princeton, N.J. 08540.

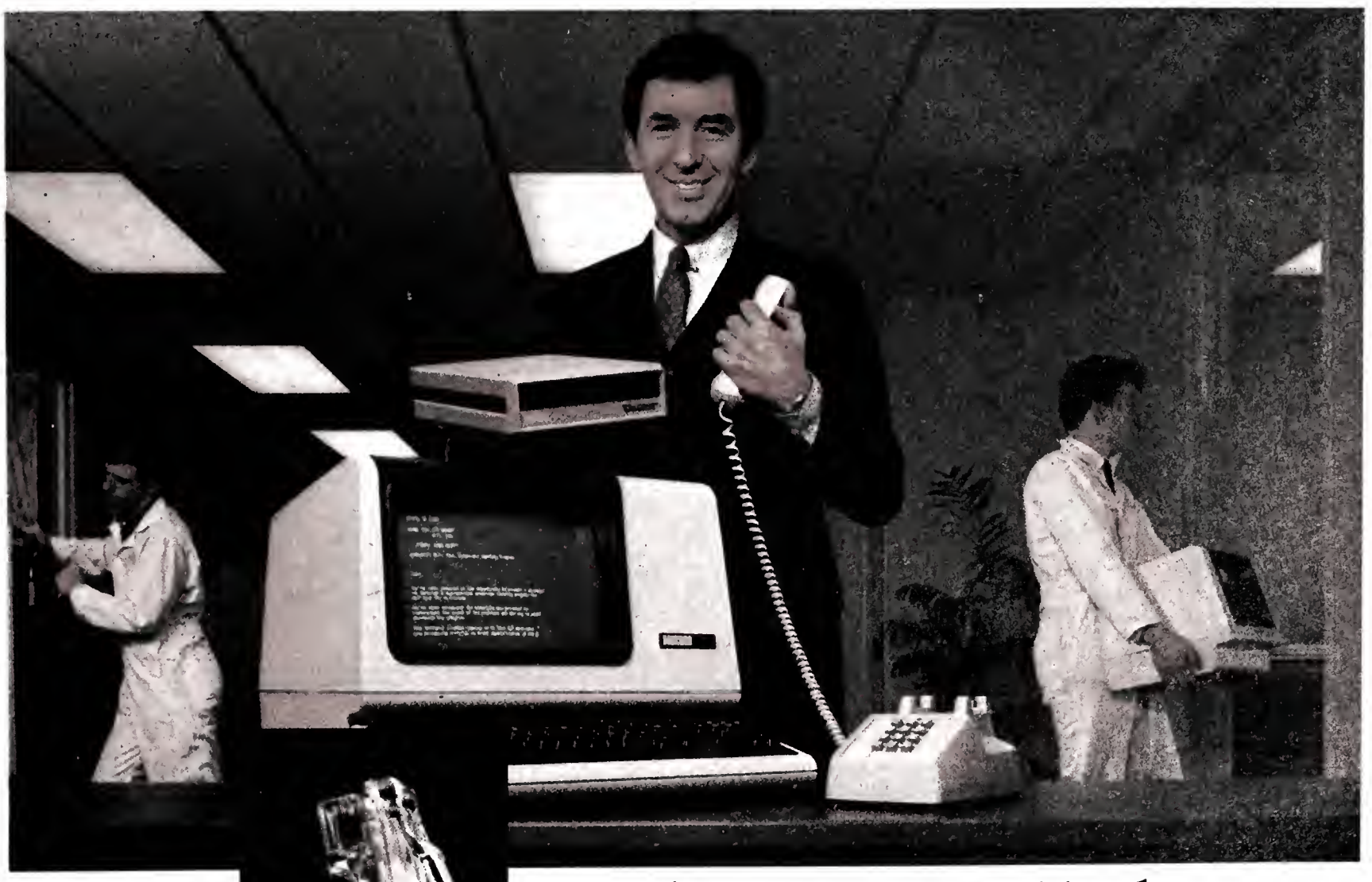
Computer Intelligence

At Booths P7346-P7348, Computer Intelligence Corp. will be explaining its "Personal Computers in Key Accounts" (Pika) program.

This information service is designed to identify large-volume users of microcomputers in key accounts. Pika reportedly provides installed user data and highlights their 1983 buying plans. The program is said to uncover companies with up to 2000 computers installed and several more planned for 1983.

The information provided highlights: volume-buying plans for personal computers in large accounts; micros currently installed; groups or individuals responsible for acquisition; applications areas planned; current micro buying standards; and personal computers communicating or networking. Information is collected directly from users by the firm's staff via 1,500 telephone surveys conducted monthly to large and medium-scale computer sites in the firm's Computer Installation Data File.

The subscription cost of the service is $500/mo to $1200/mo depending on the selection criteria. Computer Intelligence is located at 3344 N. Torrey Pines Court, La Jolla, Calif. 92037.



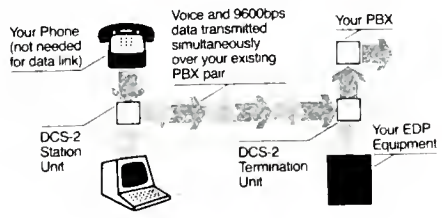
"Today we installed 27 terminals but not a foot of data cable. We're using Teltone's DCS-2 instead."

There's only one thing you can count on these days. If anything can change, it will. And sooner than you think.

That may be why more than 300 companies have installed our DCS-2 Data Carrier System: to help them cut the cost of adding or moving terminals by using existing PABX wire to carry both voice and data traffic—simultaneously.

With DCS-2, a PABX (or Centrex) becomes a common communications network. From then on, making a computer hookup is as easy as plugging in a phone. Up to 9600 bps of dedicated-channel, full-duplex data can be transmitted or received by any RS-232C terminal in your system. But the data won't interrupt phone service.

At a time when drilling one hole for cable can cost $100 or more, the Data Carrier System is a smart choice economically. Logistically, it can make your next move faster and far less troublesome. Like the one you'll probably be making next week?



For fast information call 1-800-227-3800 Ext. 1122 (in California 1-800-792-0990 Ext. 1122) or write Teltone Corp., PO Box 657, Kirkland, WA 98033. In Canada call (416) 475-0837 or write 91 Telson Road, Markham, Ontario L3R 1E4.

TELTONE®

FCC Part 68 registered. For users of DEC, Prime, Data General, Tandem, IBM Series/1, H-P and other asynchronous computers.

Communications

Micom Systems, Inc.

Micom Systems, Inc. will feature its entire line of communications networking products in Booth W6496.

Micom's exhibit will feature the company's Micro600 Data Private Branch Exchange (PBX), which can now be linked together with a transparent interconnect facility, allowing users to install local-area networks at geographically dispersed locations or to fulfill the requirements of large single sites with thousands of terminals and computer ports. In a network of Micro600s, users can be granted access to any resource available on any of the interconnected PBXs. The PBX costs $800.

Other products to be presented at the booth include:

- The Micro860 Concentrator Switch, an intelligent networking device that connects up to eight Micro800/2 Data Concentrators, providing a number of add-on networking functions — add-on switching, channel contention, queuing and centralized management — to what would otherwise be a collection of point-to-point links. The switch is priced at $2,550 for a four-composite model and $3,250 for an eight-composite version.
- The Micro4000 Model 4096/4+ multiport modem, which combines a time-division multiplexer with a 9,600 bit/sec modem in a single package to support up to four synchronous terminals or channels on one unconditioned telephone line. The modem is priced at $3,695.
- A dial backup unit to be offered in free-standing packaging, integrated with the company's Micro4000 Models 4048/V.27+ and 4096 modems, and as a card module for use with rack-mounted Micro4000s. The unit is priced at $775, and a card-module version sells for $650.
- An X.25-compatible concentrator pad, which reportedly packetizes data from as many as 16 asynchronous terminals or computer ports for transmission over a single telephone line to a public or private X.25 packet data network. The price for the Micro800/X.25 concentrator pad starts at $2,050.

Micom is located at 20151 Nordhoff St., Chatsworth, Calif. 91311.

Visual Technology, Inc.

Visual Technology, Inc. will highlight its line of graphics terminals and CRTs in Booth S5350.

Among the units on display will be the Models 500 and 550 microprocessor-based graphics terminals. Emulating the Tektronix, Inc. 4010, the units are said to feature vector draw, point plot, rectangle draw and multiple line styles.

The Model 500 provides switchable emulations of Digital Equipment Corp. VT52, Data General Corp. D200, Lear Siegler, Inc. ADM-3A and Hazeltine Corp. 1500 terminals. The Model 550 is a buffered-editing, block-mode terminal.

The Model 500 costs $2,495, and the Model 550 costs $2,695 from 540 Main St., Tewksbury, Mass. 01876.

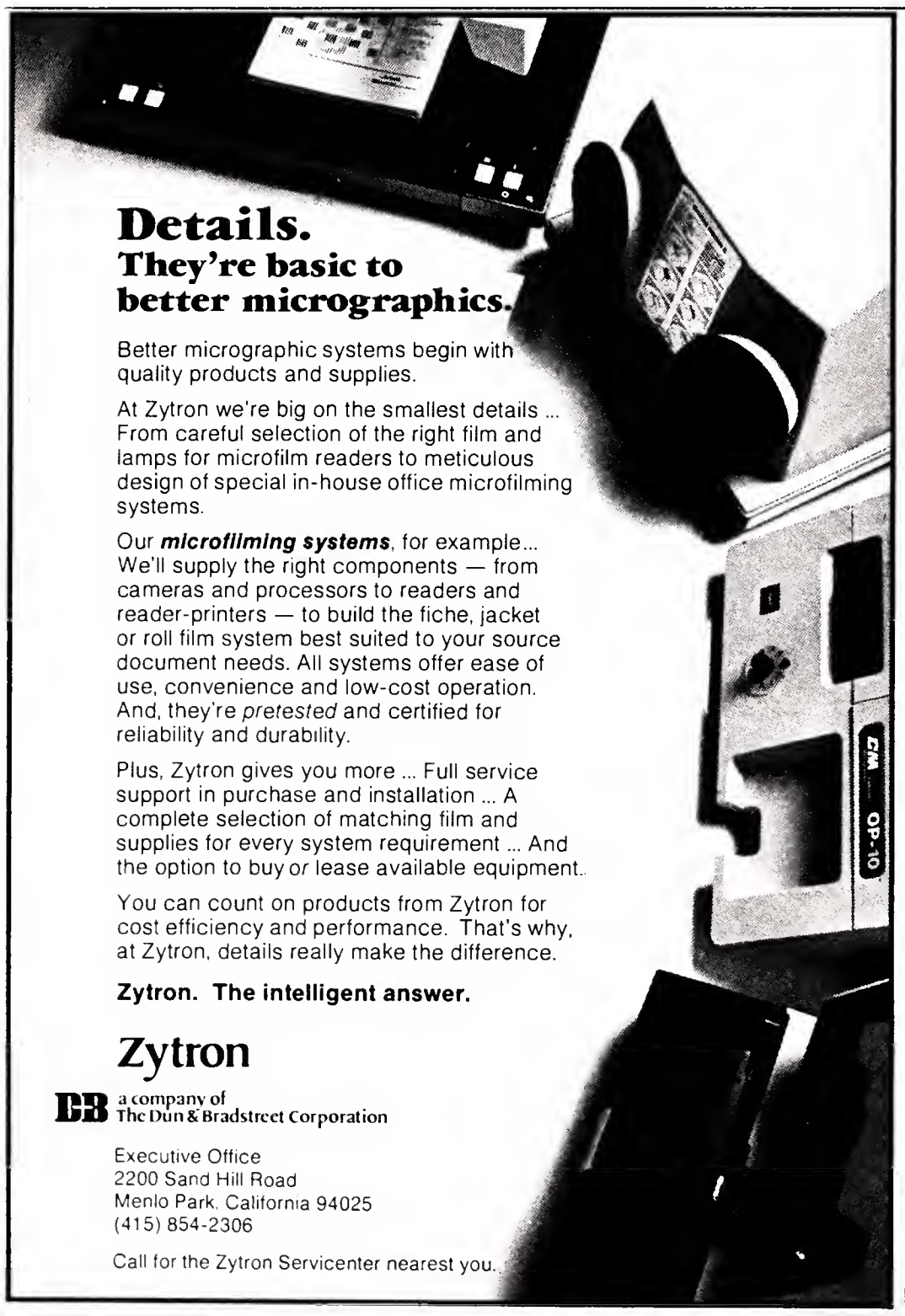
Racal-Milgo, Inc.

Racal-Milgo, Inc. will display its Model 8278 display stations, a family of data terminal equipment functionally compatible with the IBM 3278 series, at Booth N3710.

The 8278 family has four available models that operate in an IBM Systems Network Architecture (SNA) and non-SNA network structure.

The Model 8278 display stations can be attached to the Racal-Milgo 4270 series of IBM-compatible remote and cluster controllers, a vendor spokesman said.

Prices range from $1,999 to $2,556. The vendor is located at 6250 N.W. 27th Way, Fort Lauderdale, Fla. 33309.



Details.
They're basic to better micrographics.

Better micrographic systems begin with quality products and supplies.

At Zytron we're big on the smallest details ... From careful selection of the right film and lamps for microfilm readers to meticulous design of special in-house office microfilming systems.

Our ***microfilming systems***, for example... We'll supply the right components — from cameras and processors to readers and reader-printers — to build the fiche, jacket or roll film system best suited to your source document needs. All systems offer ease of use, convenience and low-cost operation. And, they're *pretested* and certified for reliability and durability.

Plus, Zytron gives you more ... Full service support in purchase and installation ... A complete selection of matching film and supplies for every system requirement ... And the option to buy or lease available equipment.

You can count on products from Zytron for cost efficiency and performance. That's why, at Zytron, details really make the difference.

Zytron. The intelligent answer.

Zytron

DB a company of The Dun & Bradstreet Corporation

Executive Office
2200 Sand Hill Road
Menlo Park, California 94025
(415) 854-2306

Call for the Zytron Servicenter nearest you.

END DISK CONVERSIONS FOREVER.

Now all your software can use any type of DASD device—CKD or FBA—without changes to programs or JCL.

- Place ISAM, DA, BDAM or DBOMP files on FBA disks or any CKD disk
- Use new IBM disk types without conversion
- Use any disk type for data storage without converting to VSAM
- Eliminate costly mixed-disk environments
- Convert to FBA in hours rather than months
- No modifications to IBM or user software
- Reduce program execution time by half

For a free information kit describing Instant-FBA, contact the SDI office nearest you.

SDI

New Jersey (201) 569-7212
Texas (214) 241-8730
Minnesota (612) 835-6822
California (415) 572-1200

or write: 1700 S. El Camino Real, San Mateo, CA 94402

Micro-Term, Inc.

Micro-Term, Inc. will show its Ergo 301 and Ergo 201 terminals at Booth S5097, as well as a graphics board capable of reproducing both Plot 10 and Regis-compatible graphics.

Priced at $895, the Ergo 301 emulates Digital Equipment Corp.'s VT100 terminal, including that terminal's video capabilities, 132-col. display and printer port features. Other features include two pages of memory, plain-English set-ups, user-programmable function keys, transparency mode and Xoff indication. Options include an amber phosphor display and Plot 10/Regis compatible graphics, which can be installed for $1,790.

The Ergo 201 terminal emulates Televideo, Inc.'s 925, Lear Siegler, Inc.'s ADM3A, DEC's VT52 and the vendor's ACT-5A terminals. The unit's detachable keyboard has 16 host-definable function keys, which may be downloaded from the host with a sequence of up to 10 bytes. Other features of the terminal include five video attributes, which can be used in any combination with no use of a character space, and a custom mode that enables the operator to define the terminal's control codes and escape sequences. Also standard is a 25th status line with five modes of operation, nonvolatile soft set-up mode and settable tabs.

The Ergo 301, 201 and graphics board are priced at $995, $695 and $1,095, respectively, the company said, from 1314 Hanley Industrial Court, St. Louis, Mo. 63144.

Megadata Corp.

In Booths S5079-S5083, Megadata Corp. will exhibit its Series 8000 Smart Multiplexor and Very Intelligent Terminals.

The Series 8000 terminals feature a low-profile, detached programmable keyboard with up to 155 keys. The Model 8188 is the standalone version.

In the same booths will be TSD Display Products, Inc., a Megadata subsidiary, to exhibit its touch-screen digitizer.

The Series 8000 terminals range from $950 (cluster terminal) to $4,000 (very intelligent controller).

The TSD touch-screen digitizers range in price from $1,030 to $1,250 for quantities of one or two.

Megadata is located at 35 Orville Drive, Bohemia, N.Y. 11716.

Innovative Electronics, Inc.

Innovative Electronics, Inc. will display at Booth S5049 its MC-80/600 protocol converter, which is part of the vendor's MC-80 line of protocol converters.

The device is self-contained and connects independent terminals to most IBM, Burroughs Corp. and NCR Corp. computers. It also provides conversion between IBM 3270 BSC and an asynchronous Ascii device.

It costs $1,495 from the vendor at 4714 N.W. 165th St., Miami, Fla. 33014.

Universal Data, Inc.

Universal Data, Inc. will display at Booths D1301 and 1302 its UDI-100 general purpose hand-held terminal, said to allow users to enter specific data, data-type verification factors, totalling and match options.

A two-line alphanumeric display allows viewing of the data. A data-entry mode is provided as well as a bar-code wand. Entered data is checked against the programmed parameters and correct data is stored in memory, the vendor said.

The UDI-100 with 32K bytes of memory is available for $1,995 from the vendor at 3960 M-15, Clarkston, Mich. 48016.



"What good is 9600 baud if your stat mux slows you down?"

Speed can be addictive, that's a fact. Once users get accustomed to fast feedback they just don't want to hear that your lines are overloaded or your mux just can't keep pace. They want their data and they want it now.

To help you avoid these baud rate bottlenecks, Teltone is happy to introduce our new M-860 Statistical Multiplexer.

You want speed? It's a thoroughbred at up to 78,600 bps, so you can take full advantage of 56K bps DDS circuits. You need flexibility? It's a chameleon that offers six different data link interfaces—two with integral modems.

Efficiency? It's an unparalleled performer that delivers multiplexing efficiencies of 800% and more. Friendliness? This is your mux—fully programmable from the local or remote end with an interactive menu system that also provides access to diagnostics and statistics. You'll never deal with DIP switches again. The M-860 is compatible with our own DCS-2 Data Carrier system and voice-grade lines, but it works equally well over microwave, coaxial cable and fiber-optic hookups.

Want more? How about local or remote echoplex, full field expansion, CRC error detection and ARQ retransmission, speed conversion—plus the same dependable service we've been giving the telecommunications industry for more than 15 years.

It's a combination that's really hard to beat, in a mux for people who'd rather be working than waiting. Call 1-800-227-3800 Ext. 2301 (in California 1-800-792-0990 Ext. 2301) or write Teltone Corp., PO Box 657, Kirkland, WA 98033. In Canada call (406) 475-0837 or write 91 Telson Road, Markham, Ontario L3R 1E4.

TELTONE

North Star Computers, Inc.

A low-cost local-area network from North Star Computers, Inc. will be featured by the vendor at Booth W6358.

The vendor will also be demonstrating its 15M-byte hard disk microcomputers, the Advantage and the Horizon ($5,999), along with recently developed financial analysis ($499) and graphics software ($249) and enhanced word processing software ($499).

Northnet is said to provide a multiuser upgrade path for the company's installed base of Advantage microcomputers. It allows system users to intercommunicate via electronic mail, tap large central files and expand their output options through the shared use of peripherals including printers, plotters and communications devices, the vendor said.

Under Northnet, users can link a total of 64 North Star workstations, file and printer servers or gateway servers in a local network for as little as $400/network connection, according to the vendor.

North Star is based at 14440 Catalina St., San Leandro, Calif. 94577.

Tandem Computers, Inc.

Tandem Computers, Inc. will display at Booth W6078 its Alternate Input Interface, said to allow machine-readable information to be entered directly into a Tandem 6530 Multi-Page Display Terminal.

The interface reportedly provides a flexible means of entering a variety of machine-readable information. This supports bar-code readers, optical-character readers types A and B, magnetic-stripe readers and other devices that output Ascii characters.

It is available for $350 from Tandem Computers, 19333 Vallco Pkwy., Cupertino, Calif. 95014.



Sytek, Inc.

Sytek, Inc. will display at Booth D2400 its Localnet 50/120 statistical monitor, said to provide network managers who use the company's multichannel broadband local-area networks with a digital, analog interface and power electronics data for monitoring a Localnet channel.

Users can specify a time period during which the Localnet 50/120 statistical monitor's screen will display cumulative information and peak-value data on the number of data packets transmitted, characters sent, sessions corrected, a histogram of packet lengths and the percentage of channel usage, a vendor spokesman said.

The Localnet 50/120 statistical monitor is available for $1,895 from Sytek, which is located at 1225 Charleston Road, Mountain View, Calif. 94043.

Raytheon Data Systems Co.

Raytheon Data Systems Co. will introduce at Booths P8152-P8160 its local-format storage-cluster controller for its PTS-2000 intelligent terminal.

The controller is said to give users of IBM 3270-type systems the capability of storing up to 100 or more formats at a remote site, saving computer time and line traffic. Typical local-storage-format savings of 60% have been recorded.

The cluster controller is available for $8,100 from the vendor at 1415 Boston-Providence Tnpk., Norwood, Mass. 02062.

3Com Corp.

At Booth D2408, 3Com Corp. will be showing its IBM Personal Computer Etherseries of hardware and software products for IBM's Personal Computer.

Included in the display will be Etherlink, a plug-in controller transceiver board that connects an IBM Personal Computer to a Xerox Corp. Ethernet local-area network providing shared access to hard disks, printers and electronic mail features. Etherlink costs $950, the vendor said.

Also on display will be the firm's Ethershare network server, which consists of a 40M-byte disk drive, and specialized software.

The Ethershare network server reportedly allows multiple Personal Computers to access information on a shared hard disk.

In addition, Etherprint, a special printing software package, and Ethermail, an electronic mail package, can be used in conjunction with Ethershare, according to a spokesman for the vendor.

Ethershare costs $14,500. Etherprint costs $750, and Ethermail costs $1,500, the vendor said from 1390 Shorebird, Mountain View, Calif. 94043.

LOOK FOR THE BLIMP WHEN YOU ATTEND **NCC** TO LEAD YOU TO THE TECHNICAL CAREER JOB FAIR® ...the original

NOT AFFILIATED WITH NCC, AFIPS OR COMPUTERWORLD

For software development and computer services expertise...Gesco's The One.

We currently support a telecommunications network of over 6500 ON-LINE terminals run in a large-scale, multiple CPU environment utilizing MVS/SP, JES2, CICS, ACF/VTAM, ACF/NCP, TSO and INTERACT. With the installation of our new IBM 3083 alongside our existing 3033 and 4341 processors, we are more capable of handling the dynamic growth of the industry.

To support our expansion, we're seeking the following individuals to join us at our headquarters in FRESNO, CALIFORNIA:

***PROJECT LEADERS**-With the responsibility for the overall leadership of projects and assigned staff, the candidates must have a minimum of 4-5 years' Savings & Loan and/or banking experience and a solid knowledge of Information Systems. Equally important is a demonstrated ability to effectively manage large projects in an organized manner. You must be a **leader** with previous supervision and **strong** communication skills.*

***SYSTEMS ANALYSTS**-A solid background in the Savings & Loan and/or banking with a minimum of 4 years' Information Systems experience using structured analysis techniques. Having implemented large projects, you must also possess excellent organizational, communication and analytical skills.*

***PROGRAMMERS ANALYSTS Assembler/CICS**-These positions require a minimum of 3 years' programming experience within a large IBM mainframe environment. A solid background in structural programming techniques plus Savings & Loan and/or banking experience is highly desirable.*

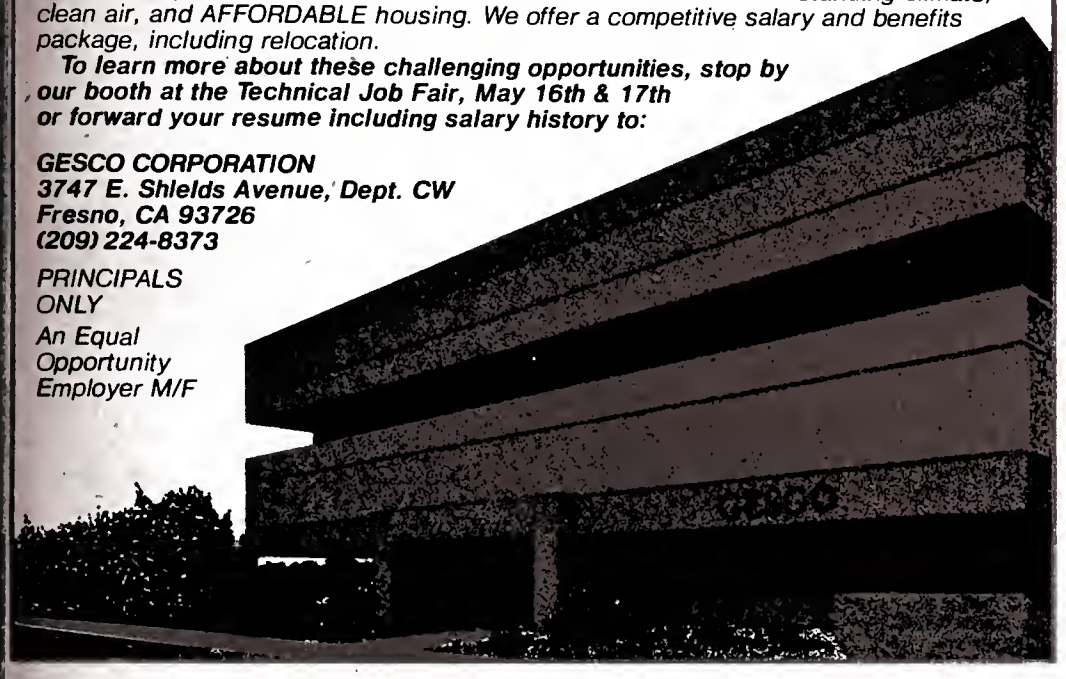
***TANDEM PROGRAMMERS or Data Com Specialists**-Tandem experience using TAL and Enscribe, or Data Com experience with SDLC and BiSync Protocals Experience with ATMs and large IBM mainframes plus Project Management or Supervisory experience highly desired.*

Fresno is just three hours from San Francisco and offers an outstanding climate, clean air, and AFFORDABLE housing. We offer a competitive salary and benefits package, including relocation.

To learn more about these challenging opportunities, stop by our booth at the Technical Job Fair, May 16th & 17th or forward your resume including salary history to:

GESCO CORPORATION
3747 E. Shields Avenue, Dept. CW
Fresno, CA 93726
(209) 224-8373

PRINCIPALS ONLY
An Equal Opportunity Employer M/F



TECHNICAL CAREER JOB FAIR® ...the original

PROGRAMMERS...
A Higher Salary Should Be The Least Important Reason For Joining Us.

It's a fact! You'll earn more working with WORLDWIDE COMPUTER SERVICES than you normally would in private industry. And with good reason.

We're a leader in software consulting...with offices serving just about every major market in the U.S., as well as abroad. But more importantly, because we service a multiplicity of Fortune 500 clients, we can give our programmers the kind of diversity and exposure they just can't find in the private sector. And couple this with our on-going educational opportunities and you'll find a growth curve and professional environment second to none.

If you're ready to take a giant step in your career consider these immediate and future openings at our rapidly expanding area offices.

•APPLICATIONS
- Communications (Voice & Data)
- Real-Time Data Acquisition
- Defense (EW, C³I, ASW, etc.)
- Relational Database Concepts
- Telephony
- Operating Systems

•HARDWARE
- Micro/Mini/Mainframe
- Intel 8080/8086 (MDS/NDS/RMX)
- M 6800/68000
- VAX/SEL 32/ECLIPSE
- TANDEM/PRIME/ANUYK
- IBM/UNIVAC

•SOFTWARE
Assemblers/PASCAL/PLM FORTRAN/COBOL/PLI
CMS-2/ADA/JOVIAL

For prompt consideration please send resume complete with salary history and requirements in confidence to: **Margaret Cahill.**

WCS WORLDWIDE COMPUTER SERVICES

7 Doig Road, Wayne, New Jersey 07470
An Equal Opportunity Employer M/F
(Some Assignments Require U.S. Citizenship. Contractors Welcome)

Join a revolution.

It's just not easy to staff a revolution. Apple needs people. Lots of them.

People as committed and qualified as you.

And we're ready to recruit them now. Apple will be present at the Technical Career Job Fair sponsored by BPI in Anaheim May 16 and 17. There we'll discuss what's involved in leading a revolution. What your role would be. And how we all can expect to profit.

TECHNICAL CAREER JOB FAIR® ...the original

ENGINEERING
- Hardware Design—Digital and Analog
- Mechanical Disk Drive Development
- Automated Manufacturing
  - Electrical/Mechanical—Peripheral Devices
  - Data Communications
- Software
  - Operating Systems
  - Compilers
  - Test Engineer/Programmer
  - Technical Support
  - Service Engineer/Programmer

MARKETING
- Product Marketing
  - Systems
  - Markets
- Market Development
- Retail Sales Development
- Sales Training
- Field Sales

MIS
- Programmer Analysts (IBM System 38 RPG III)
- Sr. System Programmers (MVS)

If you're qualified for the revolution and want to learn more about it, talk with us at our booth. Or, if that's not possible, send your resumé to Professional Staffing, Apple Computer Inc., Dept. NCC, MS 16-B, 20525 Mariani Avenue, Cupertino, CA 95014.

apple® An equal opportunity employer

Now that you know where the world is going, consider the advantages of getting there first.

© 1983 Apple Computer Inc.

SHERATON ANAHEIM HOTEL
1015 W. Ball Road, Anaheim, CA

TECHNICAL CAREER JOB FAIR® ...the original

"We are not an employment agency."

TWO DAYS ONLY!
MON., MAY 16 • TUES., MAY 17
11 AM to 9 PM BOTH DAYS

Visit the booths of more than 50 hiring companies. Even if you're presently employed and may not be interested in a job change, come on over and see what they have to offer in advanced professional-level computer disciplines and applications. You just may discover a greater challenge with greater rewards.



Teltone Corp.

Teltone Corp. will show its line of multiplexers at Booth P7706.

On display will be the firm's Teltone M-825 data multiplexer, which can be used in private data networks over four-wire circuits. The multiplexer was designed to accommodate 32 RS-232C asynchronous full-duplex data sources with a maximum rate of 9,600 bit/sec on all ports simultaneously. The unit costs $3,200, the vendor said.

Also, the firm will be showing the M-860 statistical multiplexer, which provides composite link speeds up to 76,800 bit/sec. The unit can be configured with from eight to 32 asynchronous input channels at individually programmable speeds of 50 to 9,600 bit/sec. An eight-channel RS-232C version of the M-860 is priced at $2,400.

Teltone's Data Carrier System, the DCS-2, a two- to eight-channel package which can grow into a large-scale data communications network, will also be shown.

The DCS-2 adds a data channel to a private automatic branch exchange telephone system for simultaneous voice and data communications on local telephone pairs. Terminals can be placed wherever a telephone is located without tying up a telephone. A two-channel system costs $1,500. An eight-channel system costs about $474 per channel, the vendor said, from 10801 120th Ave. N.E., P.O. Box 657, Kirkland, Wash. 98033.

Terminal Rentals, Inc.

Terminal Rentals, Inc. will display products it sells from its retail outlets at Booth N4402

These products include:

- NEC 7710 word processor ($2,306).
- Televideo 950 CRT ($1,022).
- Qume 11/40 word processor ($1,429).
- 3M Whisperwriter electronic mail device ($1,135).
- Diablo 630 printer ($1,799).

Terminal Rentals is located at 2722 Walnut Ave., Tustin, Calif. 92680.

Digital Engineering

Digital Engineering, Inc. will feature its Gen.II Retro-Graphics add-on packages for Applied Digital Data Systems, Inc. (Adds) and Televideo, Inc. terminals in Booth D230.

The software reportedly features full emulation of the Tektronix, Inc. 4010 series of graphics terminals and monochromatic emulation of the graphics functions of the Tektronix 4027 color graphics terminal.

A printed-circuit board assembly, Gen.II is powered by an 8-bit microprocessor and provides a screen resolution of 640 by 240 pixels. Designed for Adds Viewpoint and Viewpoint/3A Plus terminals, as well as Televideo 910, 912, 920, 925 and 950 terminals, Gen.II costs $1,095 from 630 Bercut Drive, Sacramento, Calif. 95814.

Computer Transceiver Systems

Computer Transceiver Systems, Inc. (CTSI) will introduce its Execuport 443 and exhibit a variety of its Execuport line of terminal printers at Booths P7213-P7215.

The Execuport 443 is said to be a plain paper printing terminal with a memory capacity of 16,384 characters to its Execuport 400 line and is reported to be ideal for electronic mail and time-sharing applications.

Among the Execuports on display will be the 1,200 bit/sec, 120 char./sec 4120 terminal system; the 1,200 bit/sec, 120 char./sec buffered, editing 4120 Batch/Send/Recieve; the P200 OEM thermal printer; the 400 series portable plain paper impact terminals; the Execuport-Sherlock security system; and the 4000G graphics terminal.

Execuport systems range in price from $795 to $4,000. CTSI can be reached through P.O. Box 15, E. 66 Midland Ave., Paramus, N.J. 07652.

American Bell AIS

American Bell, Inc.'s Advanced Information Systems (AIS) division will feature the AIS/System 85, the newest member of its product family, at Booth N3900.

Like all of the firm's Dimension products, the System/85 features integrated voice, high-speed data and networking capabilities. It also boasts an expandable architecture and a Digital Communications Protocol (DCP).

The System/85 is lease priced from $6,939 to $17,500 per month, depending on equipment configuration, from American Bell Information Systems, located at 100 Southgate Pkwy., P.O. Box 1955, Morristown, N.J. 07960.

M/A-COM, Inc.

M/A-COM, Inc. will show its CP9000 high-performance communications processor and its product line of data communications multiplexers, with an emphasis on its Advanced Switching and Advanced Statistical models, at Booth N4708.

The ASM9200 multiplexer is said to allow total system interconnectivity, reduce the number of CPU multiplexer ports and give the user switched networks. The 9100 statistical multiplexer is best used where there is a need to connect a number of remote devices to a host, the company said. Both are available with integral modems.

The four-channel 9200 is priced at $3,050, the 9100 at $2,450 and the CP9000 communications processor starts at $35,000 from the vendor at 11717 Exploration Lane, Germantown, Md. 20874.

Ann Arbor Terminals

Ann Arbor Terminals, Inc. will be exhibiting its Genie and Genie-Plus terminals at Booths W6613 and W6614, both of which have been announced but not shown previously.

Genie features Ansi online editing, a 15-in. nonglare screen and full diagnostics, while the Genie-Plus features full editing, a scrollable 60-line memory, and 60 programmable keys.

Genie is priced at $1,195 and Genie-Plus at $1,395 from Ann Arbor Terminals, Inc., 6175 Jackson Road, Ann Arbor, Mich. 48103.

A Major Conference

Microcomputers and Organizational Productivity

June 7 & 8, 1983
Boston Park Plaza Hotel
Boston, Massachusetts

Panel Discussions on:

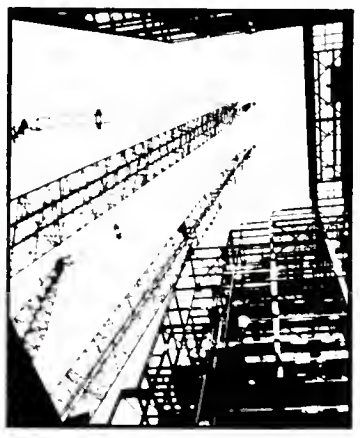
- Software Development Issues
- Management Experience Issues

Vendor Demonstrations of Micro Software for Major Organizations

Keynote Speakers:

Peter G.W. Keen, Micro Mainframe, Inc.
C. Lawrence Meador, Research & Planning
Mitchell Kapor, Lotus Development Corporation
Frederic C. Withington, Arthur D. Little, Inc.

Contact: Micro Conference
215 First Street
Cambridge, MA 02142
(617) 864-0900



INTACT 50
Project Management Package

Fully integrated project controls for your cost, schedule and corporate financial systems.

Now, there is a complete project management system that gives you more responsive control over all project information

- fully integrated job cost/project schedule/corporate financials
- modular design for flexibility to suit current and future needs
- flexible, user-tailored options to shape the system to your business requirements
- versatile enough for any size or number of projects
- interactive, on-line processing
- integrated data base for most efficient data management
- designed for all Prime 50 Series computers

Select from any of these powerful software systems:

- TRACK 50 Project Scheduling and Network Graphics
- Project Accounting/Cost Evaluation (PACE)
- General Ledger with Budgeting
- Payroll/Personnel with Labor Distribution
- Accounts Payable with Purchase Order
- Accounts Receivable
- Fixed Assets with Equipment Billing
- Performance Measurement Report Generator

Write or call our Marketing Coordinator today for our free color brochure.

DB COMPUTING
INTERACTIVE MINICOMPUTER SYSTEMS AND SERVICES

Dept. W5 1100 Eisenhower Place, Ann Arbor, Michigan 48104
Tel. (313) 973-1900 • Telex: 8102236048 • 8102232403

BUILDING A COMPUTER CENTER?

If you're planning a new expanded or remodeled DP facility, you need Datasphere's help.

Since 1968 Datasphere's unique combination of products and services has saved dollars, frustration and time for large and small firms around the world.

From turnkey—design build packages to the smallest support equipment, we'll do all or part—without schedule or cost surprises! Because Datasphere is unique—we're engineers, builders, manufacturers and architectural planners.

Our complete line of equipment includes:

- *Uninterruptible Power Systems*
- *Computer Power Centers*
- *Computer Fire Protection Systems*
- *Computer Type Air Conditioning*
- *Gas Turbines/Diesel Generators*
- *Elevated Flooring*
- *Custom Consoles*
- *Security Systems*
- *Systems Monitors*
- *Voltage Regulators*
- *Line Filters*

CALL DATASPHERE NOW!
800-221-0575
IN NEW JERSEY CALL: 201-272-1810

Write for additional information

datasphere, Inc. *49 Meeker Avenue, Cranford, N.J. 07016*

THE FUTURE OF TECHNOLOGY IS TAKING SHAPE AT SPERRY

Senior-level positions now available for those who have five or more years experience in:

LOGIC DESIGN
Design logic, firmware; logic simulation and check out using ECL/VLSI technology and advanced CAD system.

SYSTEMS DESIGN
Architecture design and advanced systems design.

CAD DEVELOPMENT
Design advanced CAD system for use in developing large scale computer systems. (Hardware description language development or compiler design and development together with language constructs development experience is applicable.)

CIRCUIT DESIGN
Design with LSI/VLSI for controlled impedance multilayer assemblies; specify timing and interconnect of high density micro-electronic packaging; use CAD to interface with logic designer, component designer and to evaluate components and circuits.

DESIGN VERIFICATION PROGRAMMING
Design and implement programs to verify compliance of new mainframe systems with product specifications.

STORAGE DEVICES
Evaluate, specify, characterize semiconductor storage devices using computer controlled test equipment. Interface with product designers, device vendors, Procurement.

STORAGE SYSTEM DEVELOPMENT
Direct the logic design of a mainframe storage buffer.

1100 PROGRAMMERS
Real-time systems, operating systems, software quality control, diagnostic software work, database development, compiler design or communications. Familiarity with Series 1100 systems is desirable, but not required.

Accelerated development of our new mainframe products has out-paced our capacity to fill these positions from within. If you qualify, you will be given both technical and management accountability to carry the work through to completion.

Your Sperry Opportunity is now. See us at:

TECHNICAL CAREER JOB FAIR ...the original

Sheraton Anaheim Hotel
1018 West Ball Road
Anaheim, California
May 16 & 17, 1983

If you are unable to attend, please send your resume and/or letter of qualifications to Jan Lubov, Employment Representative, Sperry, P.O. Box 43942, MS 4973, St. Paul, MN 55164. An equal opportunity employer m/f/v/h.

SPERRY

WE UNDERSTAND HOW IMPORTANT IT IS TO LISTEN.

POWER JOBS . . .
For Computer Profesionals

As the largest energy supplier in Arizona, we have a solid commitment to finding dedicated people with keen foresight and strong motivation to join our power team.

At Arizona Public Service Company, we welcome progressive computer professionals who enjoy working at the center of activity in highly visible positions. Bring your expertise to rewarding use in our creative atmosphere as we work together for a better Arizona future. Currently, we have the following openings:

SYSTEMS/PROGRAMMER ANALYST
You must possess a minimum of 2 to 4 years experience in real-time software development and process control. FORTRAN and ASSEMBLY knowledge is required for one or more of the following: CDC Cyber 18/20, MODCOMP Classic, Honeywell 4500/L-6, SEL 55/75 and DEC 11 Series computers. Experience in a power generation plant would be helpful.

COMPUTER TECHNICIANS
Requirements include a minimum of 2 years experience including chip level repair on one or more of the following systems: SEL 32/55, MODCOMP Classic, Honeywell L-6 and 4500, CDC 1820 and PDP/11 Series.

To get acquainted with the excellent opportunities we offer, visit us at our booth at the BPI Job Fair at the Sheraton Anaheim on Monday and Tuesday, May 16 and 17 from 11:00 a.m. to 9:00 p.m. If you are unable to attend, please send your resume in confidence to Charles Kilzer.

APS.
Arizona Public Service Company
P.O. Box 21666, Station 6145, BPI/CW
Phoenix, Arizona 85036
An Equal Opportunity Employer M/F

TECHNICAL CAREER JOB FAIR ® the original

A FUTURE WITH A FUTURE

Even in these days of high talent demand, you can't take it for granted. At PRC, the here and now is studded with more starting points to more futures than you can imagine. AND the futures are filled with branching "nodes" that can route you away from over-specialization, repetition, obsolescence.

The present at PRC offers opportunities at the forefront of next-generation technology in digital communications, tactical command and control systems, the latest in mini and micro computer systems as well as vast-scale mainframes and data processing projects of far reaching importance.

Individuals with the following hardware/software experience are in great demand here:

DATA GENERAL, DEC (PDP/VAX), HONEYWELL, IBM, MAP 200/300, MODCOMP, PROTEUS, UNIVAC, VARIAN

MACRO-11, FORTRAN, COBOL, ASSEMBLY, PL/1, JOVIAL, ADABAS, IDMS, DECNET, DMS-1100, FOCUS, CICS

As the world's largest diversified professional services organization, PRC is also able to offer you options as geographical as they are technical. Locations for which we are hiring today include:

CALIFORNIA (L.A., Monterey, Ridgecrest, Sunnyvale), HAWAII, COLORADO (Denver), TEXAS (San Antonio), NEBRASKA (Omaha), NEW JERSEY (Ft. Monmouth), VIRGINIA, WASHINGTON, D.C.

See us at the Anaheim Technical Career Job Fair on May 16 and 17.

To establish the one point contact for this entire environment, send your resume in confidence to Planning Research Corporation, Dept. CW-11, 1500 Planning Research Drive, McLean, Virginia 22102.

prc
Planning Research Corporation
An Equal Opportunity Employer M/F/H/V

SHERATON ANAHEIM HOTEL
1015 W. Ball Road, Anaheim, CA

TECHNICAL CAREER JOB FAIR ® ...the original

"We are not an employment agency."

TWO DAYS ONLY!
MON., MAY 16 • TUES., MAY 17
11 AM to 9 PM BOTH DAYS

Visit the booths of more than 50 hiring corporations. Even if you are presently employed and may not be interested in a job change, come on over and see what they have to offer in advanced professional-level computer personnel and environments. You just may discover a greater challenge with greater rewards.

HP3000
Accounts Payable
General Ledger
Quality Software Products from Technalysis
Compare price and performance. This is the ideal ready-to-run financial software for your HP-3000 business environment.
Call Technalysis today at 612 925-5900 we'll respond immediately.
Choose all or any combination of our easy-to-use HP-3000 Business packages.
Fixed Assets
Financial (Accounts Payable, Accounts Receivable, General Ledger, Payroll)
Manufacturing/Distribution (Inventory Management, Order Processing, Purchasing/Receiving, Sales Analysis)
Our products are backed by 15 years of leadership in data processing software and services.
Technalysis Corporation
6700 France Avenue South
Minneapolis, Minnesota 55435
Telephone 612 925-5900
TECHNALYSIS CORPORATION

KMW Systems Corp.

KMW Systems Corp. will be demonstrating a number of products here in Booth N3756, including its recently announced Series II 3770 Protocol Converter product line.

The Series II 3770 reportedly sends and receives Ebcdic data via an IBM Systems Network Architecture (SNA) network using Synchronous Data Link Control. The unit performs all required error-checking functions and data translations, according to a spokesman for the vendor.

It also outputs or inputs the data in serial-asynchronous or byte-parallel format to and from user-attached devices, according to the vendor spokesman. Pricing for Series II 3770 starts at $4,550.

Also on display will be KMW's Series II Hasp protocol converter, which reportedly emulates the IBM 360/370 Hasp RJE workstation. This product also costs $4,550, according to a spokesman.



Series II 3770

The Series II 3270 interactive protocol converter from KMW allows connection and operation of a number of peripheral equipment to IBM mainframes by emulating an IBM 3274 SNA or 3271 Bisynchronous Communications, according to the vendor.

Communications for the Series II Hasp is also handled through IBM Binary Synchronous Control using a modem connection following standard EIA RS-232C interfacing. User attachment of peripheral devices is provided via asynchronous Ascii RS-232C or byte parallel interfaces, the spokesman noted. This product is priced from $3,095.

The KMW VP30 Vector Processor is designed to accept random vectors, symbols and other graphics information from a host mainframe, reduce it to raster form and drive an electrostatic or laser plotter. Pricing starts at $19,500 for this product, according to the vendor.

In addition, the Series II 2780/3780 protocol converter, which uses IBM binary synchronous protocol to transmit and receive Ebcdic data, will be exhibited. This product costs $4,995.

KMW is based at 8307 Highway 71 W., Austin, Texas 78735.

Megatek Corp.

Megatek Corp. will introduce a monochrome engineering desktop terminal in Booth N3826.

The Whizzard 1645 is said to feature Digital Equipment Corp. VT-100/52 compatibility, allowing users to perform graphics design functions, a vendor spokesman said.

It also allows software development, documentation and report generation, according to the vendor spokesman.

The unit is suited for such design applications as integrated and printed-circuit board and finite element design, the vendor spokesman claimed.

The Whizzard 1645 costs $13,900 from the firm, which is located at 3985 Sorrento Valley Blvd., San Diego, Calif. 92121.

Kimtron Corp.

Kimtron Corp. will be showcasing an enhanced version of its ABM 85 display terminal here in Booth P7518.

The H model is said to be equipped with a detached keyboard, high-resolution display and 128 displayable character codes.

Pricing on this product starts at $795, the vendor said from 2225-I Martin Ave., Santa Clara, Calif. 95050.

Intersil Systems

Intersil Systems, Inc. will be showing its Genet, a broadband CATV 802C-compliant local-area network at Booth P8052.

The display will also include the firm's 4004 bus interface unit, which reportedly will be communicating with Intersil's Sunnyvale, Calif., headquarters.

A minimal workable local-area network system costs between $10,000 and $12,000, the vendor said from 1275 Hammerwood Ave., Sunnyvale, Calif. 94086.

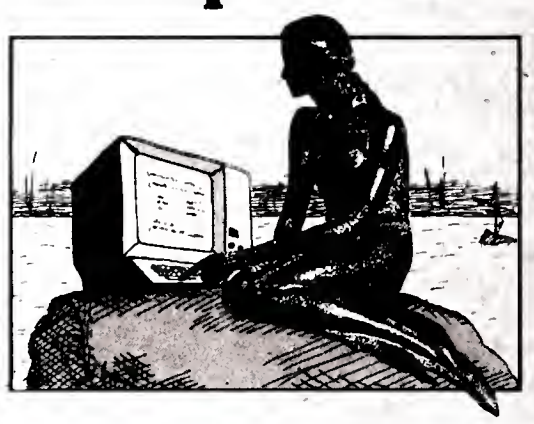
Innovative Electronics

Innovative Electronics, Inc. will display at Booth S5049 its MC-80/600 protocol converter, which is part of the vendor's MC-80 line of protocol converters.

The device is self-contained and connects independent terminals to most IBM, Burroughs Corp. and NCR Corp. computers. It also provides conversion between IBM 3270 Binary Synchonous Communications and an asynchronous Ascii device, the vendor said.

It costs $1,495 from the vendor at 4714 N.W. 165th St., Miami, Fla. 33014.

Reach the Danish computer market with Computerworld/ Denmark.



The Danish EDP market is growing at an incredible rate of 23% annually. Last year, this market was valued at more than $185 million. And the U.S. is Denmark's major supplier of EDP products accounting for 40% of the country's computer equipment imports.

When Danish computer professionals with purchasing power want the most up-to-date local and international information on the EDP industry, they read *Computerworld/Denmark*, sister publication to *Computerworld*. *Computerworld/Denmark* is a bi-weekly newspaper serving the Danish computer community with the latest developments in hardware, software, terminals and other computer products and services. And, in every issue, the MicroWorld section reports on the special needs of the micro end-user and the status of the market.

So, if you'd like to market your products or services internationally, *Computerworld/Denmark* has a circulation of 20,000 computer professionals who would like to hear from you.

CW International Marketing Services will give you one-stop advertising service in countries around the world. We will translate your ad and bill you in U.S. dollars. For more information on *Computerworld/Denmark* or any of our other foreign publications, just fill out the coupon below.

Diana La Muraglia, Manager
International Marketing Services
CW Communications/Inc.
375 Cochituate Road, Box 880
Framingham, MA 01701
(617) 879-0700

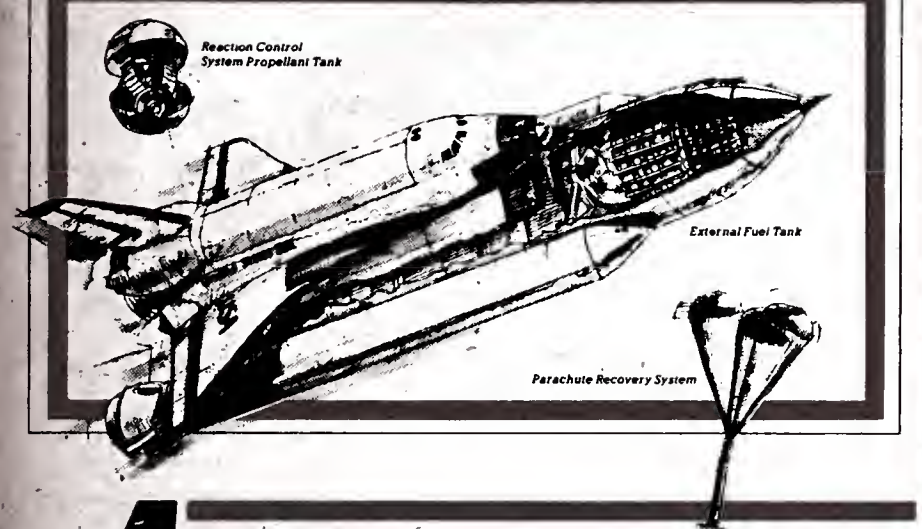
CW COMMUNICATIONS/INC.
Publishers of *Computerworld* and other leading computer publications around the world.

Please send me more information on
☐ *Computerworld/Denmark* ☐ Your other foreign publications

Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____

WHEN YOU ATTEND **NCC** LOOK FOR THE BLIMP

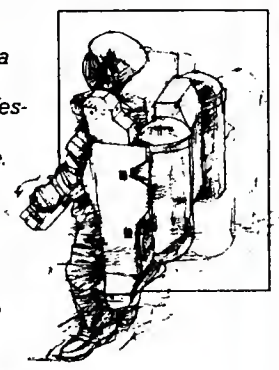
HELP LAUNCH A NEW ERA IN SPACE AND TECHNOLOGY



AT MARTIN MARIETTA DENVER AEROSPACE

You'll find a career with Martin Marietta secure, challenging and rewarding. Today, you could be working on any number of long-term projects including our rapidly expanding space shuttle activity, or in C^3 and C^3I programs. And, working in our Denver facility, adjacent to the Rocky Mountains, means you'll have every opportunity to enjoy a wide array of recreational activities as well as educational and cultural facilities that rival any metropolitan area.

So, if you are seeking a technological challenge, a secure and rewarding future and a western lifestyle filled with outdoor recreation, join the professionals in launching a new era in space and technology at Martin Marietta Denver Aerospace. If you are a systems or software engineer with current experience on Government State-of-the-Art programs, Martin Marietta would like to talk with you when you attend the National Computer Conference.



Our Technical Managers will be at the BPI Job Fair at the Sheraton Anaheim, May 16th and May 17th — See you there!

MARTIN MARIETTA

TO LEAD YOU TO THE TECHNICAL CAREER JOB FAIR ®
...the original
"We are not an employment agency."

SHERATON ANAHEIM HOTEL
1015 W. Ball Road, Anaheim, CA
TWO DAYS ONLY!
MON., MAY 16 • TUES., MAY 17
11 AM to 9 PM BOTH DAYS
NOT AFFILIATED WITH NCC, AFIPS OR COMPUTERWORLD

TALK TO TRACOR, PROFESSIONAL OPPORTUNITIES IN AUSTIN, TEXAS . . . A LOCATION YOU'LL LOVE

We are proud of being among the best. Located in one of the finest areas of Texas, we are also proud of the marvelous lifestyle available in Austin. We are seeking seasoned professionals to join us. Match your skills to the challenges we offer below.

If you have a degree and 5+ years of experience in the following, we would like to talk to you.

- **Project Engineers (Computer Design)**
- **Real-Time Programmers**
- **Senior LSI Development Engineer**
- **Senior Logic Design Engineers**
- **Component Engineers**
- **Communications Systems Design Engineers**
- **RF Systems Engineers**
- **Quality Engineers**
- **Instrumentation Test Engineers**
- **Manager, Quality & Reliability Engineering.**

Tracor offers an excellent compensation and fringe benefit package. If you are unable to visit with us, please send your résumé to Tracor, Inc., Dept. BPI 6-16, 6500 Tracor Lane, Austin, TX 78721.

U.S. Citizenship Required.
Equal Opportunity Employer M/F/H/V

Tracor Aerospace

Systems

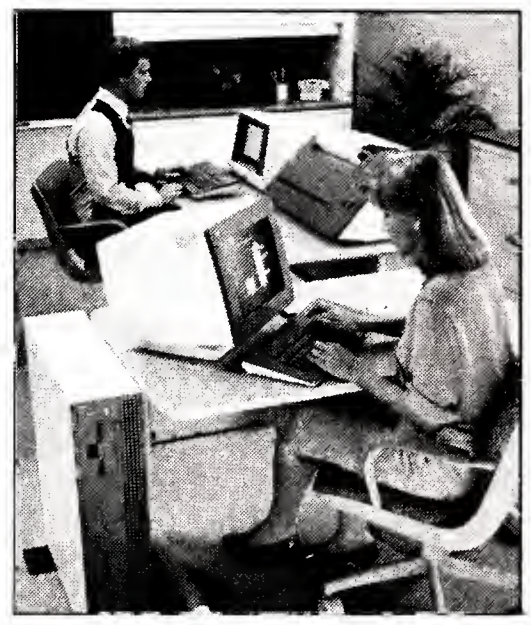
NCR Corp.

NCR Corp. will direct its energies toward exhibiting its personal computer line, small-business computer, and small-business mainframe at Booth S5074.

The Decision Mate V microcomputer series and Decision Net nonproprietary local-area network for linking micros are aimed at the business and professional markets. Single- and dual-processor models of Decision Mate V are available with up to 512K bytes of memory, flexible or Winchester disk drives and color graphics capabilities.

The Tower 1632 multiuser small-business computer, which is being sold to systems houses, features a 16-bit Motorola, Inc. 68000-based processor, an operating system derived from Bell Laboratories Unix III and data storage fixed through Winchester disk drives.

The 9300 32-bit mainframe for business applications features very large-scale integration technology, a range of communications capabilities and a library of software productivity tools. The system can be configured with peripherals to serve as a stand-alone information processing system for small businesses.



NCR Corp. Tower 1632

The Decision Mate V starts at $2,800, the Tower 1632 at about $16,000 and the 9300 small- business mainframe at about $24,000 from NCR Corp., World Headquarters, Dayton, Ohio 45479.

Zenith Data Systems Corp.

Zenith Data Systems Corp. has extended its Z-100 line of desktop computers with the introduction of two models featuring built-in 5-in. 11M-byte Winchester disk drives. These systems will be on display in Booth S5000.

The Winchester drive is said to increase the Z-100 storage capacity more than 17 times to 11M bytes, giving it the ability to hold all the accounting functions of a business. Zenith is reportedly making the enhanced Z-100 systems available in both a low-profile version and an all-in-one edition featuring built-in video display. The Z-100s are available for $5,499 and $5,599, respectively.

Zenith also will be showing the newly developed Z-29 terminal, an on-screen, menu-driven system ($849); an 8-in. disk drive in both single- or dual-drive versions ($1,599 and $2,299, respectively); and a 256K-byte random-access memory card for the Z-100 series of desktops ($799).

Further details can be obtained from Zenith at 1000 Milwaukee Ave., Glenview, Ill. 60025.

Bell & Howell Co.

Among the products Bell & Howell Co. will display at Booth D1650 is a cut fiche, computer-output microfilm (COM) recorder.

The Model 6600 is self-contained and will process wet or dry microfilm and produce ready-to-duplicate, original cut microfiche in less than 60 seconds.

The Model 6600 utilizes a Digital Equipment Corp. PDP-11 minicomputer, a 6601 COM recorder, tape drive, dual floppy disk drives, hard-copy and CRT terminals.

Prices range from $115,000 to $159,000, the spokesman said from the firm at 16691 Hale Ave., Irvine, Calif. 92714.

Solosystems, Inc.

Solosystems, Inc.'s 1116 Workstation for IBM OS/VS Cobol Programming will be on display in Booth D308.

The 1116 is a stand-alone desktop workstation for writing, editing, compiling, testing, documenting and maintaining IBM OS/VS Cobol programs. The microcomputer reportedly provides users with off-line testing for Cobol program modules and an integrated collection of programming tools not on a mainframe.

The system is priced from $35,000. Solosystems is based at 482 Oakmead Pkwy., Sunnyvale, Calif. 94086.



DEC's Interactive Video Information System

DEC

Digital Equipment Corp. will be showing its multimedia "video learning station," which is said to incorporate a newly devised hardware/software option for its Professional 350 personal computer, in Booth W6028.

This announcement comes in the wake of DEC's Vaxcluster announcement, a configuration concept that links up to 16 VAX-11 machines to function as a single, large, highly powerful system.

The Interactive Video Information System (Ivis) integrates moving or still television pictures with computer-generated text and graphics on the Professional 350 color monitor, according to a DEC spokesman. To support the entry, DEC simultaneously announced programs to handle courseware development, courseware acquisition and consulting services.

The Ivis option reportedly enables DEC personal computer users to combine natural video images with text and graphics overlays and synchronized sound, resulting in a dynamic interactive presentation, the vendor said. It is intended for use by industrial, government, military and educational organizations.

A minimum working Ivis configuration costs $12,624 from DEC headquarters in Maynard, Mass. 01754.

Altos Computer Systems, Inc.

Altos Computer Systems, Inc. (ACS) will be demonstrating its ACS 586 microcomputers, which can reportedly support from five to eight users, at Booth W6218.

The 586 line offers both Xerox Corp.'s Ethernet and Altos-Net networking capability, allowing the computer to serve a small or large business, while using the Intel Corp. 8086 processor with 256K or 512K bytes of random-access memory. Operating software available includes Unix/Xenix, MS-DOS, Pick and Associates, Inc.'s Pick and CP/M.

The 586/10 with 10M bytes of main memory is priced at $7,990 from ACS at 2360 Bering Drive, San Jose, Calif. 95131.

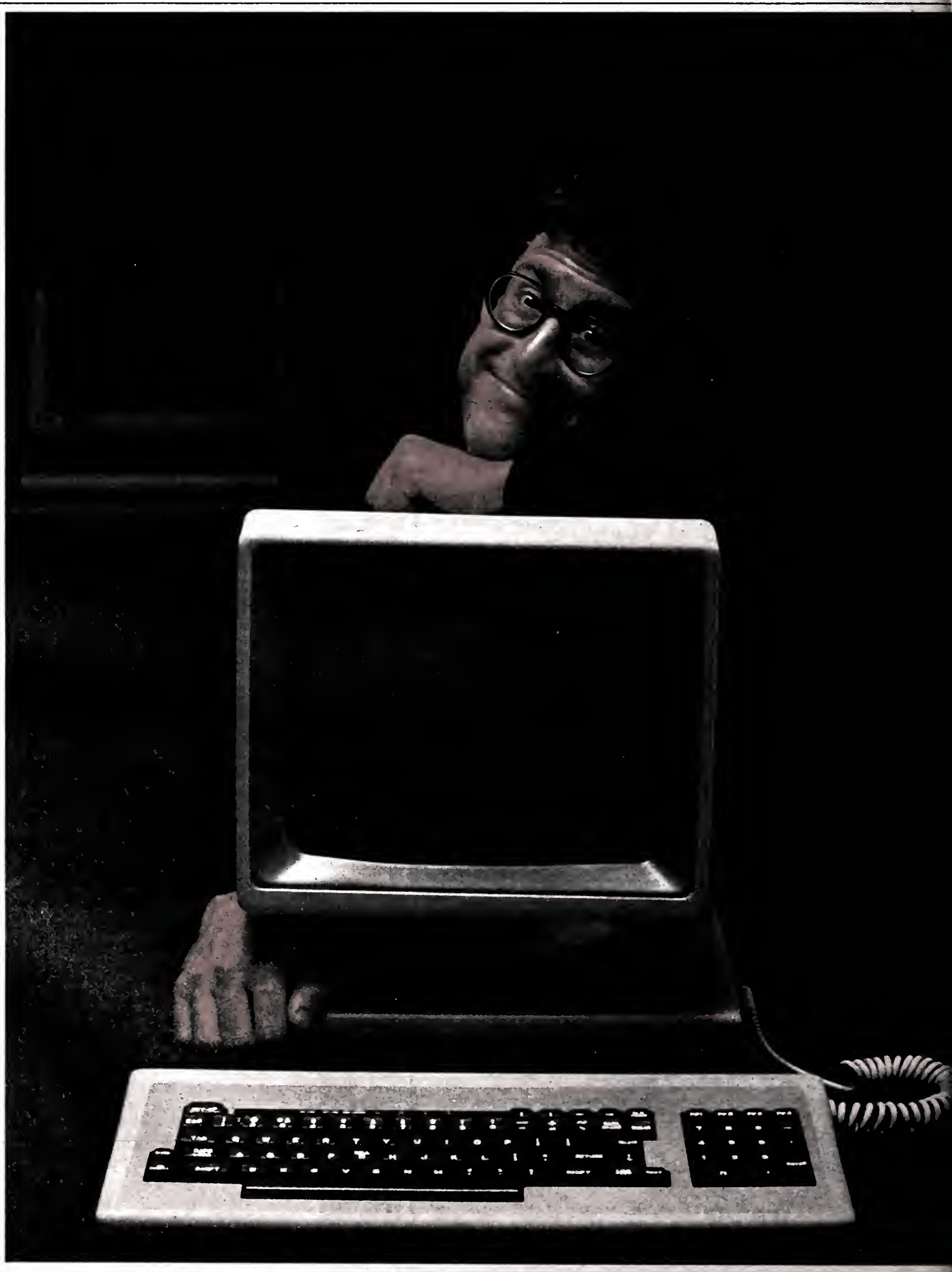
Molecular Computer

Molecular Computer will be displaying three members of its Supermicro family of 8/16-bit multiuser microcomputers at Booth P7644.

All three systems have a multiprocessor architecture made up of an internally mounted 8-bit applications processor that contains 64K bytes of random-access memory (RAM) and a separate file processor that holds up to 256K bytes of RAM. The systems run Digital Research, Inc.'s CP/M and CP/M 86 application software.

Optional Intel Corp. 8086 shared processors are also available. They hold up to 1M byte of RAM.

The Supermicro 8 with 10M bytes of Winchester disk storage supporting eight users costs $5,995, with each additional applications processor priced at $695. The Supermicro 32X with 60M bytes of Winchester storage and supporting 32 users lists for $18,995 with each additional applications processor priced at $995. The Supermicro 64X with 136M bytes of storage accommodating up to 64 users simultaneously costs $22,995 with additional applications processors priced at $995 each, the vendor said from 251 River Oaks Pkwy., San Jose, Calif. 95134.



Honeywell, Inc.



Honeywell, Inc.'s Microsystem 6/10

On display in Booth S5092 will be Honeywell, Inc.'s first microprocessor-based business computer, the Microsystem 6/10.

The system reportedly is totally compatible with the company's entire line of minicomputers, has extensive networking capabilities and offers a personal computing option as well. It is composed of a 16-bit microprocessor and uses the same operating system and range of applications and communications software as the company's DPS 6 line of minicomputers. It also offers a 16-bit Intel Corp. 8086 processor option that enables it to support the Microsoft, Inc. MS-DOS and Digital Research, Inc. CP/M 86 operating systems, according to the vendor.

The Microsystem 6/10 consists of a CPU with 128K bytes of random-access memory, two asynchronous ports, a 12-in. monitor and a detached keyboard. One or two 650K-byte diskettes and a 20M-byte Winchester-type fixed disk can be configured with the system, the vendor said. System options include a synchronous communications port, an integrated modem with automatic calling features and up to 512K bytes of main memory.

The product is slated for general availability in June. Prices start at $3,995, Honeywell said from 200 Smith St., Waltham, Mass. 02154.

Gould, Inc.

Gould, Inc. is expected to unveil a family of computer systems at Booth W6058.

The systems will run the gamut from a small desktop model to a large mainframe, Gould said.

The five modular units are said to be expandable, interconnectable and operable over a local-area network. In addition, the five modular units run under Bell Laboratories' Unix operating system software, according to Gould.

The product family functions in three basic business environments: administration/finance/word and text processing; engineering/design/computer-aided design and manufacturing; and manufacturing/production/distribution, according to Gould.

Pricing on the low end starts at $5,500.

Further details are available from Gould at 6901 W. Sunrise Blvd., P.O. Box 9148, Fort Lauderdale, Fla. 33310.

Eastman Kodak Co.

At Booth N3610, Eastman Kodak Co. will exhibit its Kar-4000 information system for the storage and retrieval of computer data and source document images on microfilm.

The system was designed for medium- to high-volume job streams in which users process from 1,000 to 7,000 incoming documents per day and make 25 or more retrievals.

The Kar-4000 system includes electronic access to both on-line data and source documents, multiple application usage and the ability to operate independently either in a stand-alone mode or by accepting data from a central computer in a distributed mode.

The system incorporates a CPU, a printer, custom software and up to eight information consoles, each equipped with a Kodak IMT-150 microimage terminal and a computer terminal.

The system sells for $70,000. Kodak is located at 343 State St., Rochester, N.Y. 14650.

SEE US AT NCC BOOTH #5362

We've done it again.

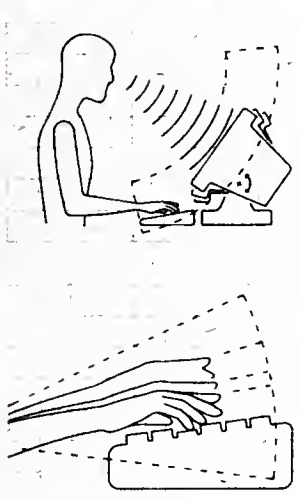
We've one-upped DEC with a fully ergonomic version of our CIT-101.

It tilts. It swivels. It has a large 14-inch screen. The detachable keyboard is pure ergonomics, right down to its matted key caps. It's called the CIT-101e.

Actually, it makes us more than two-dozen features up on the DEC VT100 series. Because our new CIT-101e has all the extras included in one terminal that DEC asks you to buy extra terminals to get.

We're making our terminals even more kind to mankind.

Features like Advanced Video. A bi-directional printer port. Tutorial soft setup mode. Monitor Mode. Window Erase. A graphics expansion card cage for full Tektronix 4010/4014 emulation and 640/240 dot resolution. (This keeps the 101e DEC compatible, but allows you to plug into PLOT 10, DISSPLA and other popular graphics packages, which you can't do with a DEC.)



And the list of standard CIT-101e features goes on and on. So you don't have to go on buying DEC after DEC to get all the features you want. You'll find them all in one CIT-101e.

How's that for kindness?

To learn more, just write or call.

CIE TERMINALS
A new company of
C. ITOH ELECTRONICS, INC.

New headquarters and Southern California sales office: 2505 McCabe Way, Irvine, CA 92714-6297. (714) 660-1421. Or call toll-free. 1-800-854-3322. Other regional sales offices: San Jose, CA (408) 977-1146; Cherry Hill, NJ (609) 983-5075; Chicago, IL (312) 992-2346; Houston, TX (713) 777-1640; Atlanta, GA (404) 257-1814; Denmark (02) 921100.

PLOT 10 is a Trademark of Tektronix, Inc. DEC and VT100 are Registered Trademarks of Digital Equipment Corporation. Tektronix is a Registered Trademark of Tektronix Corporation. DISSPLA is a Registered Trademark of PRECISION VISUALS.

© CIE TERMINALS, INC., 1983

AT 11 A.M. ON MARCH 2ND, THE WORLD CHANGED.



(10:59 A.M.)



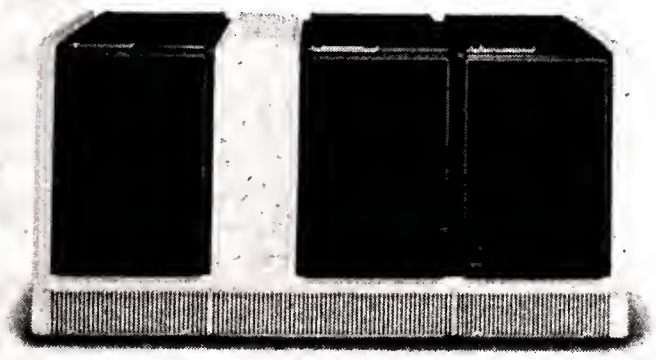
(11:00 A.M.)

If you decided to buy a computer system before 11 A.M., March 2nd, it was possible to make a purchase decision without fully considering Data General.

But on that date, the world changed.

At 11 A.M., we introduced the most powerful 32-bit virtual supermini ever produced by a computer company. Our ECLIPSE™ MV/10000.

Yet our ECLIPSE MV/10000 is simply the latest of a series of steps we have taken over the last year to make choosing Data General the best business decision you can make.



So now, if you do a comprehensive evaluation of your options – you may be surprised at the results.

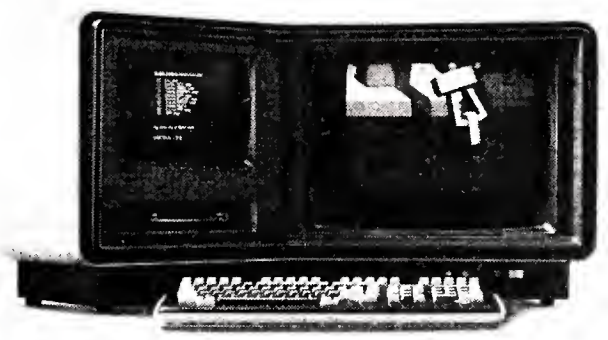
RANGE. With ECLIPSE MV/10000, we now have the broadest range of computer capability in the business. Which means there's a Data General computer that meets your exact needs. Whatever level of performance you need.

PRICE. When you compare any Data General computer with its competition, you will find one of two things. It will either have a similar price and a lot more performance, or it will have similar performance and a lot lower price. Because that's the way we've always made Data General computers.

COMPATIBILITY. Unlike our competition, we've gone out of our way to keep our entire line of computers compatible. Which has kept a very important option open for you. In the event your needs ever happen to change, you can take your entire investment in software and peripherals onto larger (or smaller) Data General computers.

APPLICATION SOFTWARE. Over this last year, we have signed agreements with major suppliers of software for mechanical, electrical and architectural engineering; medical, process control; financial and decision support applications. Additionally, the MV/10000 forms the base of a powerful integrated office automation system.

SUPPORT. Since our customers are looking to us not simply for computers, but for a close working relationship, we're providing the kind of support that requires. Uptime guarantees of up to 99%. A national phone center. Remote diagnostics.



GRAPHICS. And since wherever computers are being used, the people working with them are working better with graphics, we've developed (and just introduced) the most advanced graphics workstation ever produced by a minicomputer company.

When you look carefully at where Data General is today – and where the competition is today – the world has changed.

In the past, you may not have fully considered Data General. But as of March 2nd, it will be in your own best interest to look at us very carefully.

For additional information, contact Business Group M.S.F.134; Data General Corporation, 4400 Computer Drive, Westboro, MA 01580.

Data General

See Us At NCC Booth #S-5174

Pertec Computer Corp.

Pertec Computer Corp. will be showing its recently announced 3200 family of computer systems and peripherals at Booth N3848.

Based on the Motorola, Inc. 68000 microprocessor, the System 3200 processors are available in both floor and desktop configurations. The systems support multitasking, single and multiple users. The systems can run several languages concurrently, the vendor said.

The entry-level Model 3205 is available with between 256K bytes and 1M byte of main memory, three RS-232 ports, an adjustable monitor, detachable keyboard and an integrated intelligent workstation with two 5¼-in. floppy disk drives, the vendor said.

The top-of-the-line 3240 is mounted in a floor cabinet and is available with between 1M byte and 4M bytes of main memory; three RS-232 ports; two station controllers, which can support up to 32 workstations and 30 printers; a 21M-byte streaming cartridge tape drive; and a 70M-byte Winchester disk drive. An 8-in. 1.6M-byte drive can be substituted for the 70M-byte drive, the vendor said.

The 3200 series systems cost between $5,000 and $34,000 for basic system configurations, the vendor said from 17112 Armstrong Ave., Irvine, Calif. 92714.



Pertec's Model 100 Workstation

Altos Computer Systems

In Booth W6218, Altos Computer Systems, Inc. will exhibit its ACS68000 family, a multiuser microcomputer series based on the Motorola, Inc. 68000 microprocessor.

The microcomputers permit system integrators to transport applications software designed for mainframes directly onto the Altos microcomputer family.

The ACS68000 system features Motorola's 16/32-bit microprocessor. The system provides 8- to 16-user capability. The ACS68000-14 features a 40M-byte Winchester hard disk for storage and is priced at $14,500. An 80M-byte system will be available for $16,500 in the first quarter of 1983.

Altos is located at 2641 Orchard Pkwy., San Jose, Calif. 95134.

3M Co.

The File Management Systems Division and COM Systems of 3M Co. will exhibit their micrographics reader/printer and high-speed computer-output microfilm systems at Booth N3956.

The Model 900 reader/printer operates on-line with a host to receive search commands and index information directly from the data base. The File Management Systems Division will also show its Micrapoint II computer-assisted micrographics retrieval system and Model 800 microfiche reader/printer, which makes dry prints from source document fiche.

COM Systems will show its 720 series of computer-output microfilm systems, said to produce dry fiche in on-line or off-line modes and featuring minicomputer or microprocessor control.

Model 900 is priced at $1,000, Micrapoint II at $18,000, Model 800 at $1,800 and the 720 series beginning at about $105,000 from 3M, which can be reached through P.O. Box 33600, St. Paul, Minn. 55133.

Fujitsu Microelectronics, Inc.

Fujitsu Microelectronics, Inc. will be demonstrating its Micro 16 personal business computer in Booth W6478.

The system reportedly comes with two microprocessors integrated to run Digital Research, Inc.'s CP/M 86 operating system, word processing and electronic spreadsheet software. It also has two 5¼-in. floppy disks with 320K bytes of formatted storage each and 128K bytes of parity-checking random-access memory (RAM).

The price of Micro 16, including dual-processor CPU, 128K bytes of RAM, detachable keyboard, operating system software, word processing and electronic spreadsheet software, 52K bytes of graphics RAM and red/green/blue color monitor, is $3,995. Fujitsu can be reached at Suite 103, 2840 San Tomas Expwy., Santa Clara, Calif. 95051.

PRICE RELEASE

The $110.00 SMD/CMD CDC Replacement

REPLACE THIS



WITH THIS



Price Schedule $110.00 each
(Inquire for OEM Discounts)

REFURBISH 100% RETURN $75.00 EACH

Brum-ko will rework your CDC SMD/CMD disk heads—we will refurbish those which are repairable and fill the gap with the Brum-ko Compatible at $75.00 per head for a 100% return.

FEATURES:
1. 3330 High Reliability Slider Technology.
2. Electrically and Mechanically Compatible.
3. High Refurbishment Yields.
4. Suitable for:
   - 9760, 9762, 9764 and 9766 CDC Drives
   - Cartridge Module Drive, 9448 Drives
   - Storage Module Drives for End Users of 40, 80, 150 and 300 Megabyte Drives

★ ★ ★

For more information, purchase, delivery or pricing, please call

brum-ko magnetics corporation
301 park road • elkhorn, nebraska 68022
(402) 289-2400
Telex 484390

COMMUNICATION and CONTROL
CABLE
MULTICONDUCTOR—UNSHIELDED
2576 UL LISTED

Each Conductor Stranded Tinned Copper, Color Coded, Polyvinylchloride Insulation, Conductors Twisted, Gray Polyvinylchloride Jacket Overall.

Compare the cost savings for your company when you specify Weico cable

WEICO NO.	NO. OF COND	NOM. O.D. (INCHES)	ALPHA EQUIV P/N	ALPHA* COST/MFT	WEICO COST/MFT
4002	2	164	1172	74 71	48.00
4003	3	169	1173	94 49	60.00
4004	4	194	1174	109 70	72.90
4005	5	199	1175	126 89	102.00
4006	6	209	1176	174 24	110.00
4008	8	224	1178	231 11	132.80
4009	9	249	1179	275 63	148.50
4010	10	259	1180	316 04	174.00
4012	12	279	1181	370 10	204.21
4015	15	304	1181/15	552 74	278.50
4020	20	324	1181/20	735 83	382.33
4025	25	364	1181/25	921 45	460.92
4030	30	379	1181/30	1026 30	580.60
4040	40	439	1181/40	1399 80	784.14
4050	50	500	1181/50	1700 73	945.67
4060	60	530	1181/60	2386 94	1139.80

*ALPHA SUGGESTED RESALE SCHEDULE DW 4K DATED 8 16 82

80°C. - 150 VOLTS
(PASSES UL VW-1 FLAME TEST)

HIGHEST QUALITY
Manufactured to the most rigorous MIL and commercial standards

IMMEDIATE DELIVERY
Orders received before noon will be shipped the same day

ALSO IN STOCK:
Hook-up Wire - Teflon • PVC • Irradiated PVC • Prebonded PVC • Kynar • THHN
Cable - Coaxial • Computer • RS-232 • Welding
Braid • BUS Wire • Tubing



Send for FREE Catalog

WEICO WIRE & CABLE, INC.
45 Sarah Drive, Farmingdale, NY 11735 • TEL: (516) 293-0050

Anderson Jacobson, Inc.

Anderson Jacobson, Inc. will be debuting in Booth S5292 its Intel Corp. 8088-based portable computer along with its existing lines of modems and matrix and ink jet printers.

The Executive PC portable unit has 256K bytes of random-access memory; two disk drives, with each handling up to 320K bytes of data; a 7-in. amber screen; and Microsoft, Inc. MS-DOS 2.0 operating system. Base price of the system is $2,995.

Also on display will be the recently released Series 8 multiple modem system, which consists of the AJ triple modem cards ($850), high-speed AJ 4048 modem ($4,595), modem chassis and shelving ($380), power supply ($160), blower fan ($295) and two sizes of cabinets, 35- and 70-in. high ($565 and $725, respectively). Each chassis within the system holds up to eight modems and two power supplies. The system is compatible with Bell 212A and VA 3400 series modems at 1,200 bit/sec and the Bell 103/113 modems at 300 bit/sec. Operating at 4,800 bit/sec, the system communicates over a two-wire switched network.

The AJ 1259-AD autodial/autoanswer triple modem also will be exhibited. The device is compatible with the Bell 212A and VA 3400 series of modems at 1,200 bit/sec and the Bell 103/113 modem at 300 bit/sec. Purchase price of the device, which can store up to 10 numbers, is $875 with the monthly leasing cost set at $60.

The vendor can be reached at 521 Charcot Ave., San Jose, Calif. 95131

Nixdorf Computer Corp.

Nixdorf Computer Corp. will be demonstrating its distributed data processing systems and two new versions of its Distributed Processing Executive (DPEX) operating system software here in Booth W6100.

The 600 series systems provide data entry, data processing and data communications capabilities and the ability to handle up to 32 concurrent tasks.

The DPEX II and DPEX III are said to provide enhanced data entry, data management and Editor programming language features. Pricing on the operating system software starts at $3,500, the vendor said from 300 Third Ave., Waltham, Mass. 02154.

Gimix, Inc.

In Booths P7946 and P7948, Gimix, Inc. will be showcasing its GMX III 6809 system, featuring a newly developed CPU board, its OS-9 GMX III multiuser, multitasking operating system and an intelligent I/O board.

The system hardware includes 256K bytes of static random-access memory, a 40M-byte unformatted 5¼-in. Winchester hard disk, a 1M-byte unformatted 5¼-in. floppy disk and three RS-232C ports, according to a vendor spokesman.

The base price for a three-user network system is $9,998.89, the spokesman said. Gimix is headquartered at 1337 W. 37th Place, Chicago, Ill. 60609.

Telefile Computer Products, Inc.

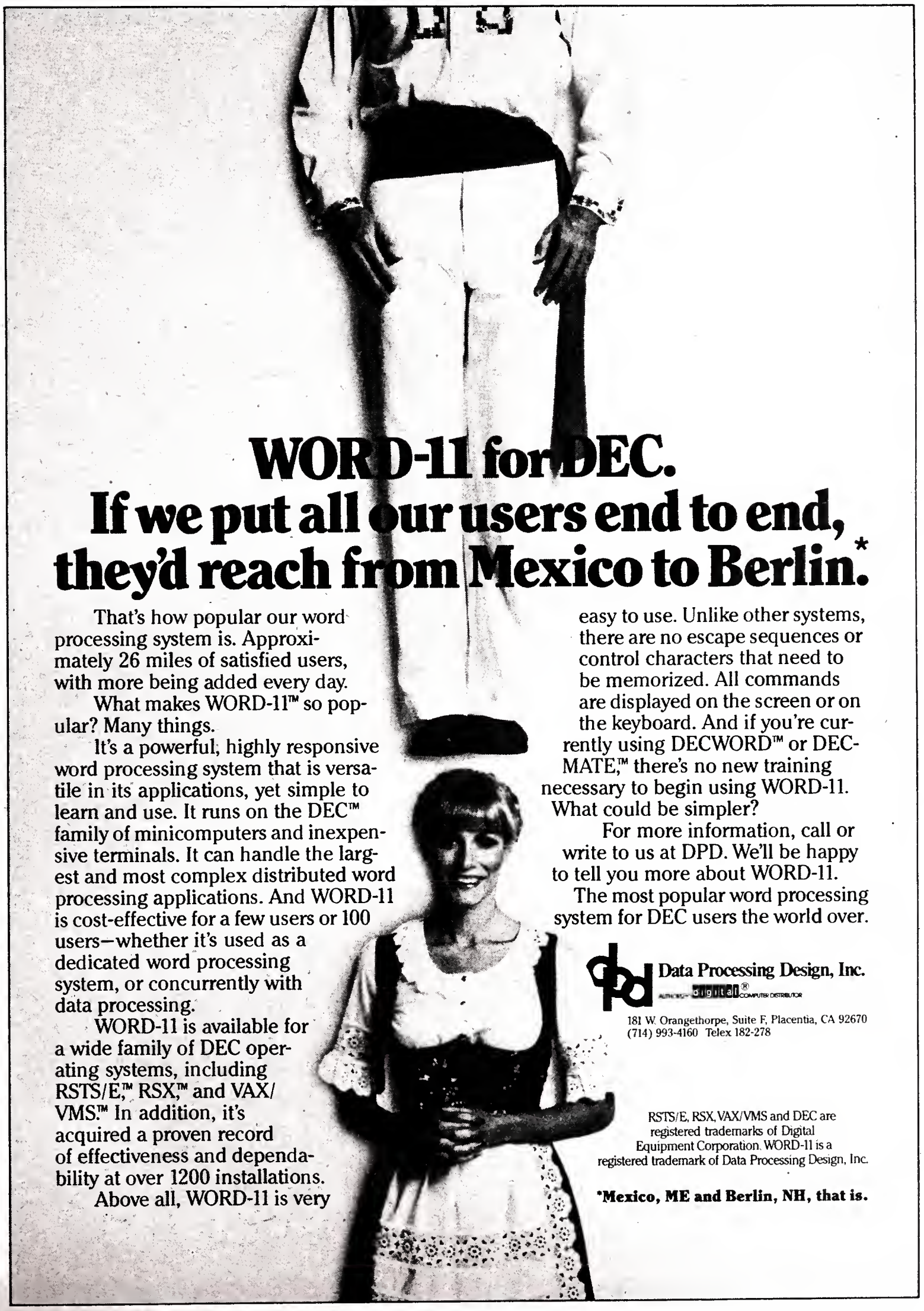
At Booth W6234, Telefile Computer Products, Inc. will be showing its newly announced T85LVM 32-bit superminicomputer, designed to operate on specialized versions of systems software used on the now-defunct Xerox Corp. Sigma line of mainframe processors.

The T85LVM is a virtual memory version of the firm's earlier T85 processor, offered as an upgrade for users of Sigma series products. Now, the vendor says it is offering the T85LVM as a general-purpose superminicomputer.

The system uses Telefile's TCP-V/LVM operating system, which the vendor calls a "greatly enhanced" version of Xerox's CP-V operating system.

The Telefile system can support up to 16M bytes of virtual memory, using 32M bytes of physical memory with up to 12 access ports and four memory banks. Binary, floating-point, logical or decimal data operations can be performed in a 64-bit, 32-bit, 16-bit or 8-bit address space, the vendor said.

The T85LVM costs $238,500, the vendor said from 17131 Daimler St., Irvine, Calif. 92714.





Wang Laboratories, Inc.

Wang Laboratories, Inc. will be showing its line of small business systems and superminicomputers at Booth N3926.

On display will be the firm's VS 25 and VS 45 distributed office systems. The VS 25 can support up to 10 workstations with up to 512K bytes of main memory and 68M bytes of disk storage. The larger VS 45 can support up to 20 workstations with 1M byte of main memory and more than 2.5G bytes of disk storage. The V 25 starts at $21,000, and the V 45 starts at $25,000, Wang said.

Also on display will be Wang's 2200 series of processors, including the entry-level SVP system, which offers between 32K bytes and 128K bytes of main memory, and the top-of-the-line MVP and LVP systems, which support up to 12 users, 512K bytes of fixed memory and up to 32M bytes of disk storage. The 2200 series of processors costs from $8,000 to about $25,000, the vendor said.

Wang's VS 100 32-bit superminicomputer and Wangnet broadband local-area network also will be on display. The VS 100 can support up to 128 users with up to 8M bytes of main memory and up to 10G bytes of disk storage. VS 100 systems cost from $90,000 to $100,000. Wangnet can connect Wang VS, OIS and Alliance systems at a transmission rate of 12M bit/sec. Wangnet costs between $500 and $1,000 per terminal, Wang said.

Wang also said it will show its Digital Voice Exchange (DVX) system. The DVX system allows the user to receive, create and send voice messages to one or more individuals. A 250-user DVX system costs $54,000, Wang said, from One Industrial Ave., Lowell, Mass. 01851.

Micromation, Inc.

Micromation, Inc. will be exhibiting in Booth D400 its Mariner, M/System and Misystem multiuser microcomputers that are all built around the company's M/Net concept.

The Mariner computer is based around the company's Z-64 board and is capable of supporting up to eight users simultaneously. The M/System is also based around the Z-64 board, which contains a Zilog, Inc. Z80 processor and 64K bytes of random-access memory. The system is standardly configured with floppy- and Winchester-type disks, according to the vendor.

The entry-level Misystem can be packaged with either the Digital Research, Inc. CP/M or MP/M operating systems or with the vendor's Dbos operating system, which is a CP/M-compatible system containing an embedded data base management system.

The fully configured Misystem is priced at $6,990, with the basic versions of Mariner and M/System costing $4,500 and $3,000, respectively, the firm said, from 1620 Montgomery St., San Francisco, Calif. 94111.

Wicat Systems, Inc.

Wicat Systems, Inc. will be showing its line of microcomputers at Booth D2200.

On display will be the newly announced System 160 (S-160). Based on the Motorola, Inc. 68000 microprocessor, S-160 can support from one to 12 users providing from 512K bytes to 4.5M bytes of random-access memory (RAM) and provide support for up to four 5¼-in. disk drives with tape cartridge backup.

S-160 is an intermediate configuration between the firm's entry-level S-500, which supports up to six users, and the top-of-the-line S-200, a rack-mountable system with an intelligent I/O capability. S-200 can support up to 32 users. S-160 starts at $15,000, the firm said.

S-200, also based on the Motorola 68000 microprocessor, features 512K bytes to 5M bytes of RAM and supports up to 474M bytes of disk storage. Up to four disk drives per controller are supported, and the system can support multiple disk subsystems. S-200 configurations cost from $26,000. The vendor can be reached through P.O. Box 539, 1875 S. State, Orem, Utah. 84057.

Your Personal Computer Tutors.

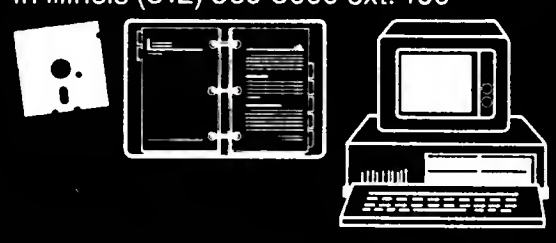


You don't have to have a degree in programming to understand your IBM PC and software. You can "Teach Yourself" with interactive learning diskettes that help you apply your software package in just 60 to 90 minutes.

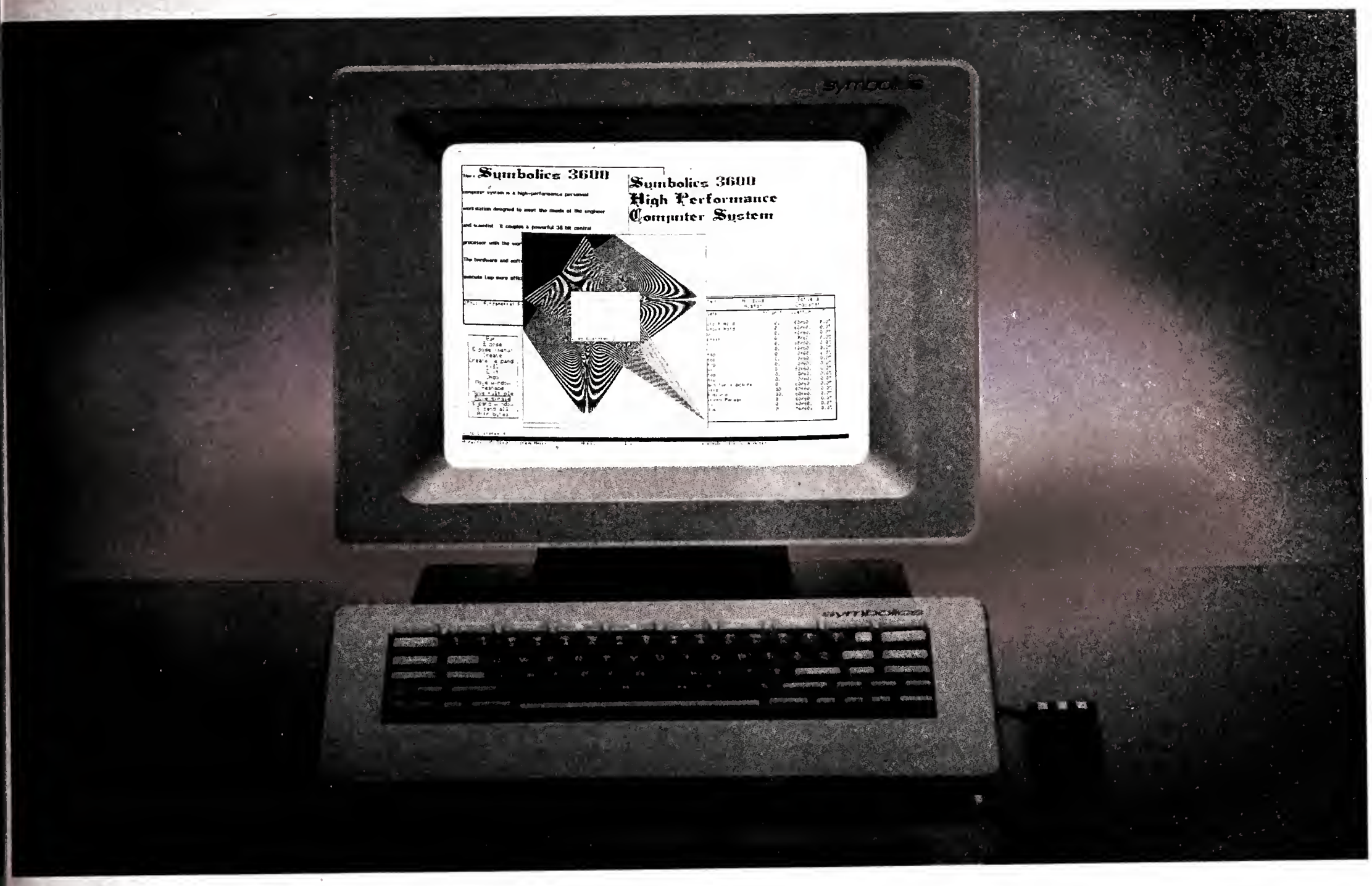
These simple, step-by-step courses come with helpful texts and references, and cover all aspects of computer literacy, productivity software, operating systems and languages. Teach Yourself. It's the education you need without a lot of pomp and circumstance.

From DELTAK Microsystems. A division of DELTAK, the world's foremost computer educator, serving over 1 million information professionals for more than 12 years.

Have questions? Let's talk.
Call 800-2-TALK-TO
In Illinois (312) 369-3000 ext. 100



DELTAK Microsystems
East/West Technological Center, 1751 West Diehl Rd., Naperville, IL 60566



The age of intelligent computing is here

Introducing the sophisticated professional workstation.

The Symbolics 3600 Lisp-based system puts unlimited computing at your fingertips

A new age of computing is here. The Symbolics 3600 Lisp-based processing system suddenly makes large-scale problem-solving simple. It makes the impractical become practical and manageable. With powerful software and hardware, the Symbolics 3600 puts a higher level of computing in your hands. A dedicated, single-user system, the Symbolics 3600 takes the technological advances from the last 25 years of research on artificial intelligence and makes them applicable to real-world, problem-solving applications. To the engineer, designer, scientist and researcher, this offers a new, powerful tool that significantly increases productivity.

Symbolics' innovations in symbolic computing extend the limits of solutions in traditional applications. For example, large-scale software system development and VLSI circuit design are massive undertakings. The Symbolics 3600 software environment takes care of many of the routine tasks a programmer or designer is now required to perform, dramatically reducing programming and design time while significantly increasing productivity. These benefits apply to emerging application areas such as development of expert systems, symbolic mathematics, robotics, CAD/CAM, genetic engineering, training simulators, and a broad range of research activities.

Symbolics 3600 Specifications

System CPU
36-bit tagged, stack-oriented architecture
2.3 megabyte RAM with ECC, expandable to 34 megabytes
1.125 gigabytes virtual memory
20 million byte/second memory bus
Floating point accelerator (optional)

Console and Keyboard
Bit-mapped raster display
B&W 17-inch, landscape format, 1100 × 800 pixel
88 keys with n-key rollover
3-button mouse
50 KHz sample rate audio output
Color: 1280 × 1024 with 8 to 32 bits/pixel, 10 bits/color RGB (optional)

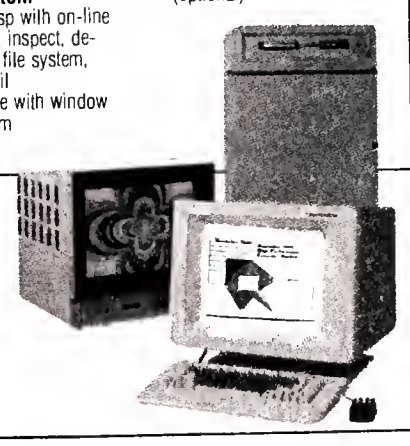
Mass Storage
Built-in 169 megabyte Winchester
Optional disk memory up to 1.8 gigabytes
Optional cartridge or 9-track tape drives

Communications
10 megabit/second Ethernet local area network
One parallel and three standard serial ports
Autodial/Autoanswer 1200 baud modem (optional)

Operating System
Enhanced Zetalisp with on-line edit, compile, inspect, debug, network file system, electronic mail
Totally interactive with window display system

Languages
Lisp, FORTRAN-77, C, PASCAL, Interlisp
Flavors object-oriented programming

Printer
Laser Graphics Printer LGP-1 (optional)



Unlimited computing power

The Symbolics 3600 puts the level of computer power associated with supermini class computers in your hands at a fraction of the usual cost. It has a 36-bit tagged architecture and executes programs at an average of one million high-level instructions per second. Our standard 3600 system software, a powerful and proven Lisp-based operating and program development environment, also supports FORTRAN, PASCAL, C, Interlisp compatibility and Flavors object-oriented programming.

Full Ethernet capabilities

The standard Symbolics 3600 includes full 10 megabit/second Ethernet hardware and software support. An unlimited number of 3600 systems, other computer systems or peripheral devices can be linked together. Each user in a typical workstation environment has access to all other computing facilities on the network.

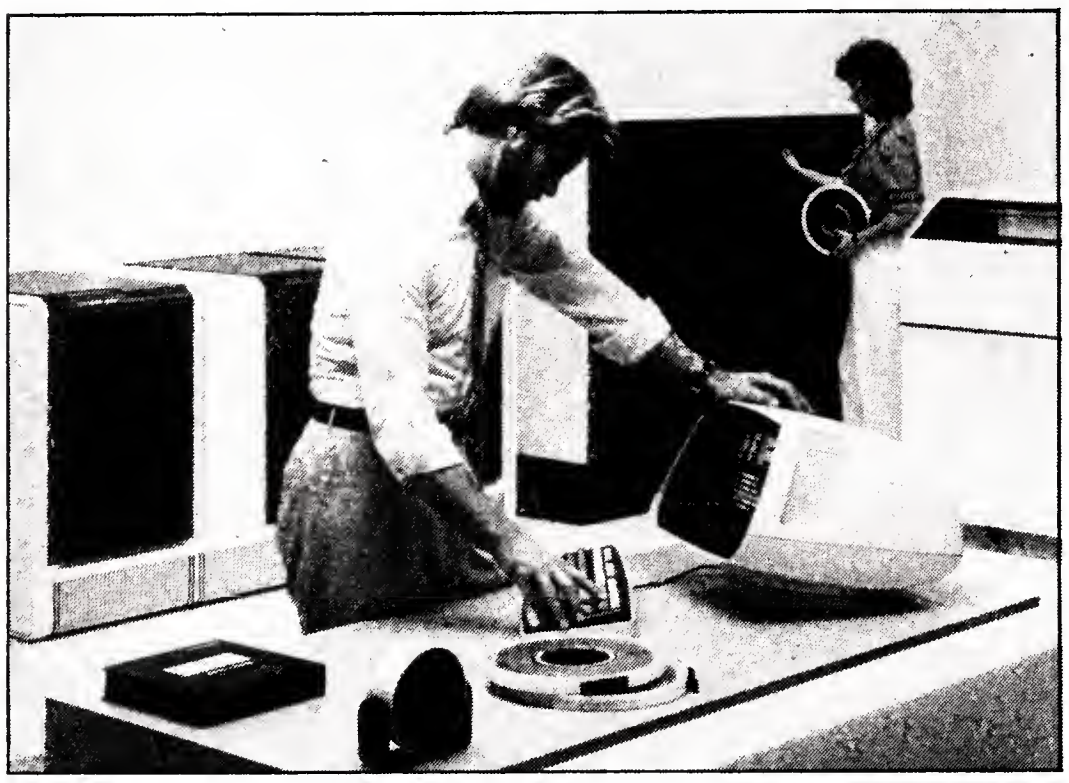
Join the new age of computing

The Symbolics 3600 brings to you today a new age of computing—symbolic processing systems that are being used by a growing number of 3600 customers as the sophisticated means for problem-solving. Join them in this new age of computing. Call or write today. Symbolics, Inc., 9600 De Soto Avenue, Chatsworth, CA 91311 (213) 998-3600.

symbolics inc.

Symbolics is a trademark of Symbolics, Inc., Cambridge Massachusetts.

©1983 Symbolics, Inc. **Domestic sales offices:** Chatsworth, CA (213) 998-3600 • Palo Alto, CA (415) 494-8081 • Cambridge, MA (617) 576-2600 • Houston, TX (713) 820-3001
International distributors: United Kingdom and Western Europe: Scientific Computers Ltd., England, Tel. (04446) 5101 • South Central Europe: Delphi Electronic Design Systems SpA, Italy, Tel. (0584) 31881 • Japan: Nichimen Corporation, Tel. (03) 277-5017



Data General's Eclipse MV/10000

Data General Corp.

Data General Corp. will be showing its line of superminicomputers and small business systems at Booth S5174.

On display will be the firm's top-of-the-line MV/10000 32-bit processor that features a maximum main memory of 16M bytes, an on-line storage capacity of 18.5G bytes and dual I/O ports. The system is compatible with DG's existing 16-bit and 32-bit systems and can be configured with the firm's Comprehensive Electronic Office (CEO) line of software and peripherals. The base price for MV/10000 systems range from $154,000 to $243,000. In a CEO configuration, a 100-workstation system costs about $6,900 per workstation, the vendor said.

Also on display will be the firm's GW/4000 Expert workstation, which is based on DG's MV/4000 processor. The system will be on display to demonstrate mechanical design and engineering analysis applications. The GW/4000 costs between $68,300 and $86,400, DG said.

Other items on display will include DG's CS Series 200 small business system, which costs between $25,000 and $75,000, and the Dasher G500 color terminal. The G500 terminal costs $9,500, the vendor said from 4400 Computer Drive, Westboro, Mass. 01558.

Floating Point Systems, Inc.

Floating Point Systems, Inc. (FPS) will be displaying its line of array processors in Booth N3916.

Software application programs that run on the FPS-164 high-precision 64-bit attached processor will also reportedly be featured at the vendor's booth. These will include structural analysis, electronic circuit design and oil-reservoir simulation, the vendor said.

Pricing on the FPS-164 attached processing computer system starts at $216,000.

Other FPS products to be exhibited will be 38-bit array processors, including the FPS-100, the AP-120B, the AP-180V and the AP-190L processors. Prices begin at $40,500, according to the vendor.

FPS can be reached through P.O. Box 23489, Portland, Ore. 97223.

Momentum Computer Systems International

Momentum Computer Systems International will be exhibiting its series of 32-bit microcomputers in Booth D200. The exhibition includes the company's new bundled system, made up of the vendor's 32-bit minicomputer and the Horizon word-processing and spreadsheet software.

The series includes Momentum 32, which has 1M byte of internal memory and a proprietary, no-wait-state memory management unit. Momentum 32 runs under Bell Laboratories' Unix operating system and comes with several language compilers. It is priced at $11,950. Momentum 32E contains 512K bytes of memory, a direct memory access controller and an optional interface for high-capacity drives. It lists for $13,250. Momentum 32/4 features dual Motorola, Inc. 68000 processors, along with a 3.9-in. Winchester cartridge drive. It costs $9,995.

The systems are available in either desktop or rack-mounted versions, the company said from 965 W. Maude Ave., Sunnyvale, Calif. 94086.

Intel Corp.

In Booth N3910, Intel Corp. will exhibit two new products along with its existing product line.

The two new products are the Xenix 286 operating system and an integrated instrumentation and in-circuit emulator.

The existing products being displayed include: System 2000 data base management system, iDIS data base information system, iDBP data base processor, iTPS transaction processing system, iTAPS terminal application processing system, iAPX family of microprocessors, 286/10 boards, 64K dynamic random-access memory, iPDS Personal Development Center, NDS II — Release 2 Network Development System, Fast — 3825 semiconductor disk and iAPX 432 processor.

Intel is located at 3065 Bowers Ave., Santa Clara, Calif. 95051.

Formation, Inc.

Formation, Inc. will be demonstrating its Failsoft and Remote Diagnostic Capabilities of its F/4000 32-bit information system in Booth P7112-P7116.

The F/4000 is compatible with the IBM 370 and incorporates redundant features that limit system downtime to roughly five minutes if a component fails, the spokesman for the vendor explained.

The complete F/4000 system starts at $71,500. Formation is based at 823 E. Gate Drive, Mount Laurel, N.J. 08054.



The 3270-A/B Generic Terminal System

**"ADM-3A"/DEC VT-100"

Compatible Plug-compatible IBM* 3270 and simultaneous ASCII** capability in the same CRT via separate communication ports.

Two terminals in one!

Functional Available as a standalone (3275/3276*), a small cluster (3276/3278*), and a large cluster (3274/3278*).

Color terminals (3279*) also available in standalone and cluster models.

Affordable Our large cluster controller is priced below $3K and 3270 terminals under $2K. Attach an ASCII printer to each CRT for economical addressable 3287* capability.

*Subject to trademark claims

TTI TERM-TRONICS INCORPORATED

7408 Trade Street, San Diego, California 92121 (619) 271-1770

Overworked? Get these DOS/VS(E) and CICS/VS labor savers!

Our program products help your systems people do more work with less effort, at a cost that's surprisingly lower than comparative methods. Use them alone or in combination.

BIMSPOOL retrieves batch prints from POWER/VS queue and prints on 3270-type terminal printers.

BIMSPOON creates batch prints from CICS application programs.

BIM-ODIS determines CICS status and operational or performance problems.

BIMSUBMT edits and submits jobs on-line.

BIMTEXT creates formatted documents from free-form input.

BIMCMPRS compresses 3270 transmissions reducing response time.

BIMDSLOG reviews DOS/VS messages without tying up system controls.

BIMSERV displays directories and entries in all DOS/VSE libraries, VTOC's and VSAM catalogs.

BIMMONTR: DOS/VSE System status, performance measurement, POWER/VSE queue and entry CRT display system.

BIMDEVC displays device assignment status.

BIMP3270: CRT print program, routes full screen image to terminal or system printers.

New products are under development for release soon. We also offer experienced systems programming consultation nationwide, with bases in Minneapolis and Washington D.C.

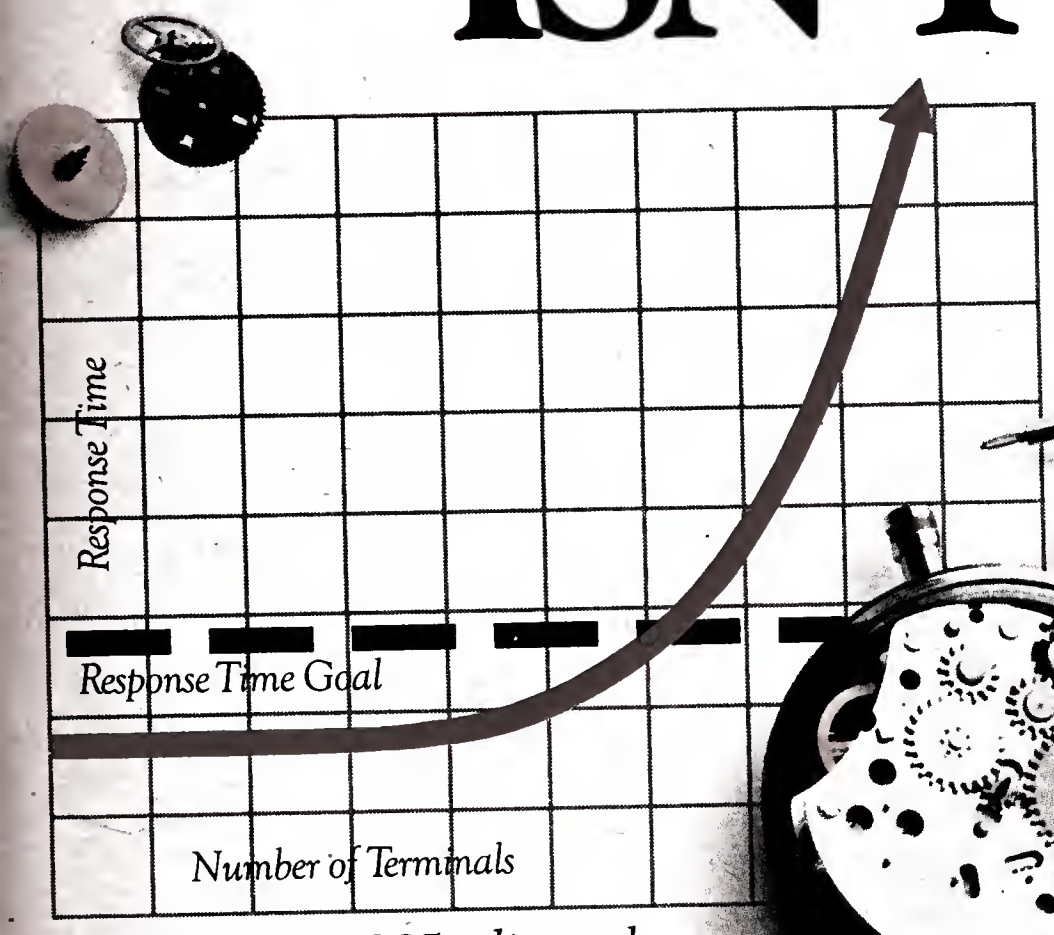
All BIM products come with a 30-day free trial, so you can see just how much labor the programs really save — without any financial risk. Full documentation is also available on request.

BIM program products are already successfully at work in 12 countries. Phone or write us to find out how they can help you.

BIM

B I MOYLE ASSOCIATES, INC
4355 Lyndale Ave. S., Minneapolis, MN 55409
612/822-2661 Telex 290 123
Member Independent Computer Consultants Association

IF YOUR SYSTEM IS SLOW, IT DEFINITELY ISN'T FAST.



Intel's FAST-3825 relieves the aggravation, of degradation.

Intel's FAST-3825 Semiconductor Disk Memory System. (Fast Access Semiconductor Technique.)

The fastest, most cost-efficient way to page and swap. Helping to free-up the mainframe from heavy on-line applications. So you can add even more users.

Allowing you to get the most out of your system. By maximizing the speed, capacity and investment of your CPU.

How fast is FAST? Typically, 20% faster than anything else. With a .4 msec access time. A 10-15% increase in system throughput. A 25-50% improvement in terminal response time. And a speed of 500 pages a second, at 3.0 to 4.Omb/second.

That's FAST.

But what makes FAST really good and fast is its flexible storage capacity. Up to 144mb. Plus that it's compatible with IBM, Burroughs, AMDAHL and NAS systems. And that FAST can be used with your present system and migrated to your next generation CPU.

Just a few more FAST thoughts. You'll be getting greater reliability, serviceability and lower cost of use. Because FAST has no moving parts. FAST is self-healing. Self-diagnostics find most problems before they can develop. Our service is fast, too. And being FAST doesn't mean you'll be wasting energy.

Because FAST requires only one-fourth the power and air conditioning of any other system. Even power outages won't slow you down, with an optional UPS backup.

Call us, toll-free. **(800) 538-1876.** In California, **(800) 672-1833.** Or write us. Lit. Dept. K-8, 3065 Bowers Avenue, Santa Clara, CA 95051.

If your system looks like it's starting to slow, you'd better do something FAST.

intel® delivers solutions

Peripherals

Dataproducts Corp.

Dataproducts Corp. will show its line of daisywheel, matrix and band printers at Booth N3938.

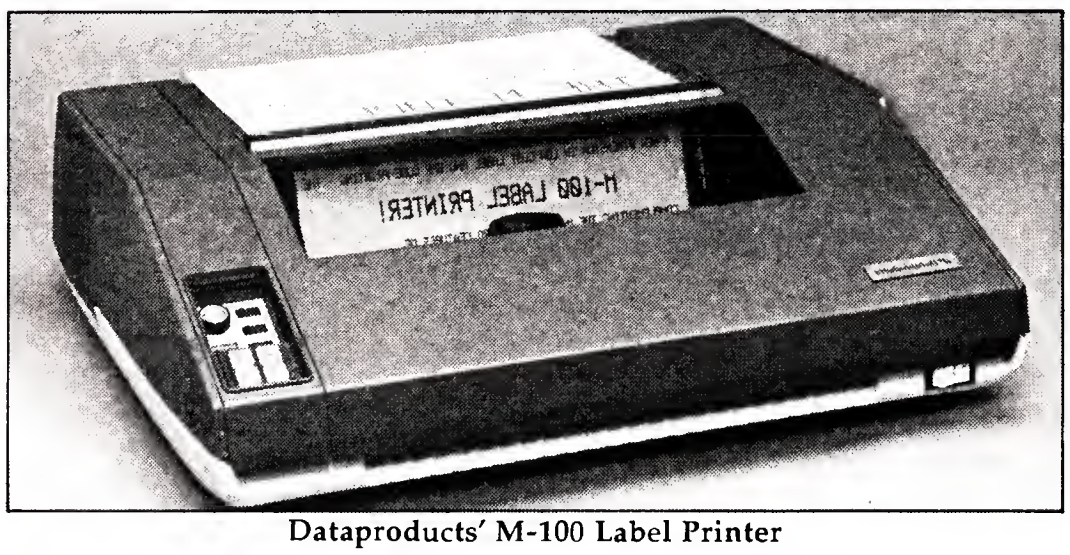
Included in the display will be the firm's DP-35 and DP-55 daisywheel printers, which offer letter-quality printing speeds of 35 and 5 char./sec, respectively. The units cost $1,995 and $2,495, a spokesman for the vendor said.

The M-Series of matrix printers will also be on display. The units can print at between 200 and 340 char./sec and cost from $2,715 to $3,015, the vendor said.

The firm's medium-speed band printers are available with print speeds of 300, 600, 1,000, 1,500 and 2,000 line/min. The units cost between $6,822 and $26,700, the vendor said.

Also on display will be the firm's M-100L, an intelligent printer that can generate labels, bar codes, block letters, graphics line drawings and text in any combination without programming. The unit costs $4,233, the vendor said.

The vendor also will show its Prism printer series from Integral Data Systems, Inc. The units offer switch-selectable print speeds of 110 to 200 char./sec and cost from $799 to $1,499, the vendor said from 6200 Canoga Ave., Woodland Hills, Calif. 91365.



Dataproducts' M-100 Label Printer

Distributed Logic Corp.

Distributed Logic Corp. will be exhibiting its Dilog DU132 tape coupler that provides users of Digital Equipment Corp.'s PDP-11/34 through PDP-11/70 minicomputers and users of VAX-11/750, 780 and 782 computers with both streaming tape and start/stop disk backup at Booth A3313.

The coupler permits data transfer rates of up to 600K byte/sec, with tape speeds of up to 125 in./sec. In start/stop mode, the device is completely compatible with DEC's VMS, RSTS/E and RT-11 operating systems.

The unit features automatic self-diagnostic routines that check the microprocessor, sequence all data paths and buffer without interfering with the Unibus.

The DU132 reportedly can be used with either ½-in. start/stop formatted nine-track tape transports made by most major manufacturers or streaming transports with embedded formatters from Cipher Data Products, Inc., Control Data Corp., Kennedy Co. and System Engineering Labs.

Single-quantity price of the DU132 is $2,850, the company said from 12800 Garden Blvd., Garden Grove, Calif. 92643.

The Next Time You Negotiate A Computer Contract, You'll Know What You're Doing . . .

Georgetown University Law Center
Continuing Legal Education Division presents

Computer Contract Negotiations

A Simulation Workshop in the Art of Negotiating User-Protective Computer Contracts

June 3-4, 1983 Washington, DC Fee: $375

Until recently, vendors of computer goods and services typically required buyers to use a standard printed contract, allowing little variation for the buyers' special needs. Things have changed. Users who know their rights and how to negotiate for them can create the contract terms they need.

This workshop places participants—lawyers, data processing professionals and purchasers of computer goods and services — in the center of the action, simulating the actual negotiation of contracts between vendors and users. The hypothetical scenarios identify issues to be resolved, (such as maintenance commitments, modifications, and source code escrow) and portray all the various vendor and user players on both sides of the table.

Following the negotiating sessions, techniques and strategies are reviewed and evaluated for overall effectiveness in creating the desired user-protective agreements.

The Faculty of Lawyers and High Tech Professionals: Lanny J. Davis, Esq.; Terry L. Bowman; Alan R. Letofsky, Esq.; Robert S. Bramson, Esq.; Vincent Favorito, Esq.; Charles B. Ortner, Esq.; Joseph E. Armstrong; Don A. Allen, Esq.; Joseph I. Rosenbaum, Esq.

Course materials are available for those unable to attend.

Mail coupon to Georgetown University Law Center (CLE)
600 New Jersey Ave., N.W.
Washington, DC 20001
Or Call (202) 624-8229

Please send more information on Computer Contract Negotiations to
Name
Firm
Address City
State Zip Tel. No.
CCN 2

SMF EXPRESS SAVES

SMF Express is a unique software system for the management of SMF data. *SMF Express* saves operator time, saves tapes, saves disk space. Most important of all, *SMF Express* saves those vital SMF records from harm, from loss--and from being overwritten.

Because *SMF Express* is smart enough to *automatically* dump SMF data sets at the right time, to the right tape. Smart enough to safeguard every record on a special data base.

SMF Express is even smart enough to retrieve and extract specific SMF records for specific periods, so *SMF Express* saves operators and analysts time. And effort. *SMF Express* ends hassles with OS/VS extraction utilities!

Discover all the ways *SMF Express* is the best way to manage SMF data...and save yourself plenty of headaches: Mail us the coupon we've provided for you.

If you need SMF Express ASAP, call us toll-free at (800) 257-8242. In New Jersey: (609) 482-2500.

VCI **Value Computing Inc. "Software systems for more efficient data centers."**

Please send me more information on *SMF Express.* Also:

☐ Send materials on VCI's other software products.

☐ Send seminar information.

☐ Begin my *free* subscription to *Data Center Data,* VCI's quarterly newsletter.

Name _____ Title _____

Company _____

Address _____

City _____ ____ _____

VCI Mail to: M. di Loreto
Value Computing Inc.
498 N. Kings Highway
Cherry Hill, NJ 08034

Facit, Inc.

A multipurpose intelligent printer from the Facit/Dataroyal Division of Facit, Inc. will bow in Booth N3538. The Model 4570 is said to store a variety of character sets and formats and to handle nearly all types of paper so that it can be matched to task requirements.

Up to 16 combinations of pitch and linguistic variants reportedly can be extracted from the basic eight-char. sets, which can be stored in the printer. The printer operates at 250 char./sec, single-pass. It costs $3,295 from 235 Main Dunstable Road, Nashua, N.H. 03061.



Facit, Inc.'s Model 4570

Shugart Associates, Inc.

Shugart Associates, Inc. will demonstrate a 3½-in. microfloppy disk drive, a series of half-height 5¼-in. Winchester drives and a series of custom large-scale integration controllers in Booth N3856.

The single-sided SA300 microfloppy is said to occupy about one-fourth the volume of a standard minifloppy and to provide 500K bytes of unformatted capacity, 135 track/in. density and 6-msec track-to-track access time. The SA300 costs under $200.

The half-height disk drives allow designers to place two units in the space of one. The units are said to be interface-compatible with standard 5¼-in. rigid disk drives. The SA706, offering 6.67M bytes of unformatted capacity on one platter, costs under $550 in OEM quantities, and the SA712, with 13.3M bytes of unformatted capacity on two platters, costs under $650. Single-unit prices are pending.

The SA1600 series of intelligent controllers is said to handle distributed arbitration, overlapped seeks and a message system, freeing the host CPU for greater I/O capability. The SA1601, for 8-in. Winchester drives, costs $340 for models on a par with the current SA1400 series and $380 for the full-performance model.

The SA1610, which handles 5¼-in. Winchesters, costs $300 for S1400 models and $340 for the full-performance model. The SA1620, for 5¼-in. floppy/rigid combinations, costs $390 and $430, and the SA1603, for 8-in. floppy/rigid combinations, costs $430 and $470 from the vendor at 475 Oakmead Pkwy., Sunnyvale, Calif. 94086.

GNT Automatic, Inc.

GNT Automatic, Inc. will exhibit a tape reader/punch station, a rack-mounted tape punch station and a tape editing machine — all for numerical control applications — at Booth N4107.

The desktop Model 4604 tape reader/punch station performs punching and reading simultaneously or independently. The unit features a microprocessor-controlled interface with buffer memory allowing conversion of codes between Ascii and EIA. Featuring an RS-232C interface with transfer rates from 110 to 4,500 bit/sec, the unit costs $2,595.

The Model 3606 tape punch station, featuring a switch-selectable power supply of 115 Vac or 230 Vac, operates at transfer rates of 50 to 1,200 bit/sec. The unit costs from $2,220 to $2,595, depending on capabilities.

The Editmaster tape editing machine and programming station incorporates an Intel Corp. 8085 microprocessor, 32K bytes of read-only memory and 32K bytes of random-access memory. The 22-lb. unit features a keyboard, a 24-line/min printer with 40-char./line, display, reader and punch. Transfer rates are programmable from 110 to 9,600 bit/sec. The price is $2,995 from 1560 Trapelo Road, Waltham, Mass. 02154.

NEC Home Electronics U.S.A., Inc.

NEC Home Electronics U.S.A., Inc. will show a wide-carriage 120-char./sec dot matrix printer at Booth D300.

The Personal Computer 8025A features 136 columns, bidirectional printing, a 2K-byte buffer for printing and typing simultaneously, tractor and friction feed, standard parallel Centronics Data Computer Corp. interface and serial option.

The unit costs $975. The firm is located at 1401 Estes Ave., Elk Grove Village, Ill. 60007.

Priam Corp.

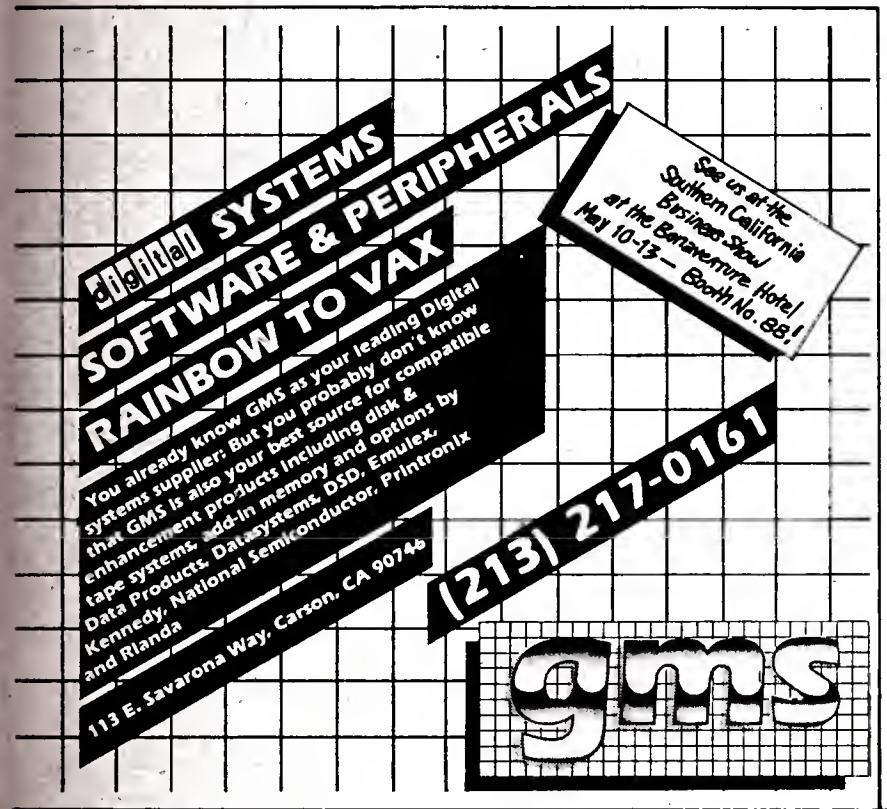
Priam Corp. will present 8-in. and 14-in. disk drives and a series of intelligent interfaces at Booth N4808.

For 8-in. Winchester disk drives, Priam will show the 35M-byte Model 3450, priced at $3,500; the 70M-byte Model 7050, for $4,400; and the 105M-byte Model 804, priced at $5,600, according to the vendor.

In the 14-in. category, the firm will display the 34M-byte Model 3350, costing $3,450; the 68M-byte Model 6650, for $4,000; and the 158M-byte Model 15450, costing $6,200.

Among the intelligent interfaces will be the Smart-T, which reportedly can control up to four Winchesters and two backup devices, the vendor said.

Pricing has not been set on the Smart-T, a spokeswoman said from 3096 Orchard Drive, San Jose, Calif. 95134.



User Perfect.

If you want to know who consistently makes the very best word processors, ask the people who use Philips. You'll find the proof in the two major independent surveys of word processing users.

Of all the word processors rated in the Advanced Office Concepts® survey, Philips placed first overall in 1981 and 1982.



For five consecutive years, Philips has been selected to the esteemed Datapro® User Survey Honor Roll.

If you want to join the satisfied users, call Philips today at 1-800-828-6211 (1-800-462-6432 in New York State) and we'll send you free copies of the reports.

Advanced Office Concepts is a registered trademark of Advanced Office Concepts Corporation. Datapro is a registered trademark of Datapro Research Corporation.

PHILIPS INFORMATION SYSTEMS

ASK ANYONE WHO HAS ONE.

PHILIPS



California Computer Products Model 84 Desktop Plotter

Calif. Computer Products

California Computer Products, Inc. (Calcomp), in Booth N3838, will be displaying its newly devised line of low-cost desktop plotters that is said to produce high-resolution charts, graphs and drawings on paper or on overhead transparency film.

The Model 84 plots up to 10 colors and plugs into any micro, mini or mainframe computer using any of three interfaces, a spokesman for Calcomp said.

It can print with liquid ink, nylon tip or ceramicron-tipped pens, according to the demands of the application, according to the vendor spokesman.

The product is priced at $1,995, the vendor said.

Calcomp is located at 2411 W. La Palma Ave., Anaheim, Calif. 92801.

Century Data Systems

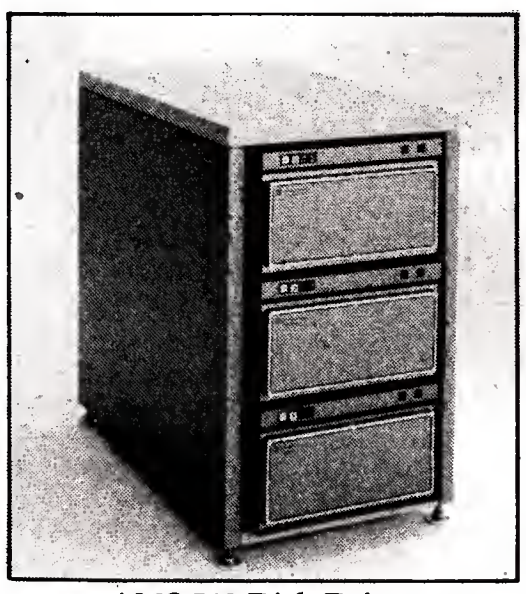
Century Data Systems will unveil its 513M-byte, 14-in. Winchester disk drive in Booth S5210.

Designated the Advanced Marksman Series (AMS) 513, the Storage Module Disk (SMD)-compatible drive racked three high is said to allow over 1½G bytes of storage capacity in one 36-in.-high cabinet. The AMS 513 three-rack cabinet option will be displayed here and is also available in a two-rack cabinet option. It includes a basic drive, power supply, desktop enclosure and selectable dual access as a standard feature.

The AMS 513 currently is available with a guaranteed 98% out-of-box acceptance rate, the vendor said. The AMS 513 disk drives are priced at $6,600 for OEM quantities of 200 orders or more. Significant discounts are available for larger orders.

The vendor also will demonstrate the AMS 315, a 315M-byte SMD plug-compatible, 14-in. Winchester disk drive. The AMS 315 two-rack packaging option also will be shown, demonstrating 630M bytes of storage capacity. It costs $5,200 in quantities of 200. In conjunction with the AMS 315, Century's Trident T306 300M-byte removable pack drive will be represented.

The vendor is at 1270 N. Kraemer Blvd., Anaheim, Calif. 92806.



AMS 513 Disk Drive



Stacpac Module

Data Systems Design

In Booths P7023-P7029, Data Systems Design (DSD) will exhibit its multibus-compatible 5¼-in. floppy/Winchester Stacpack module for systems integrators, and its DSD 5217 multifunction board which allows file-oriented transfers and image backup using a QIC 02-compatible ¼-in. streaming tape.

The module can be used as a storage subsystem with a DSD multibus controller. The DSD 5217 handles two ST506-type 5¼-in. Winchesters, two SA460-type 5¼-in. floppy disk drives and a ¼-in. tape drive.

Prices for the floppy/Winchester module begin at $3,895; the X217 family costs $1,020 each in quantities of 100, from the vendor at 2241 Lundy Ave., San Jose, Calif. 95131.

Archive Corp.

Archive Corp. will be exhibiting its Sidewinder series of ¼-in. streaming cartridge tape drives in Booth D2215 that are designed to back up Winchester disks.

Both the 20M-byte Sidewinder and the 45M-byte Super Sidewinder are offered in an 8-in. form factor. The 20M-byte Scorpion is packaged in the 5¼-in. form factor, the vendor said.

In quantity, the Sidewinder is priced at $995, the Super Sidewinder at $1,295 and the Scorpion at $995, the company said.

Archive Corp. is located at 3540 Cadillac Ave., Costa Mesa, Calif. 92626.

Orange Micro

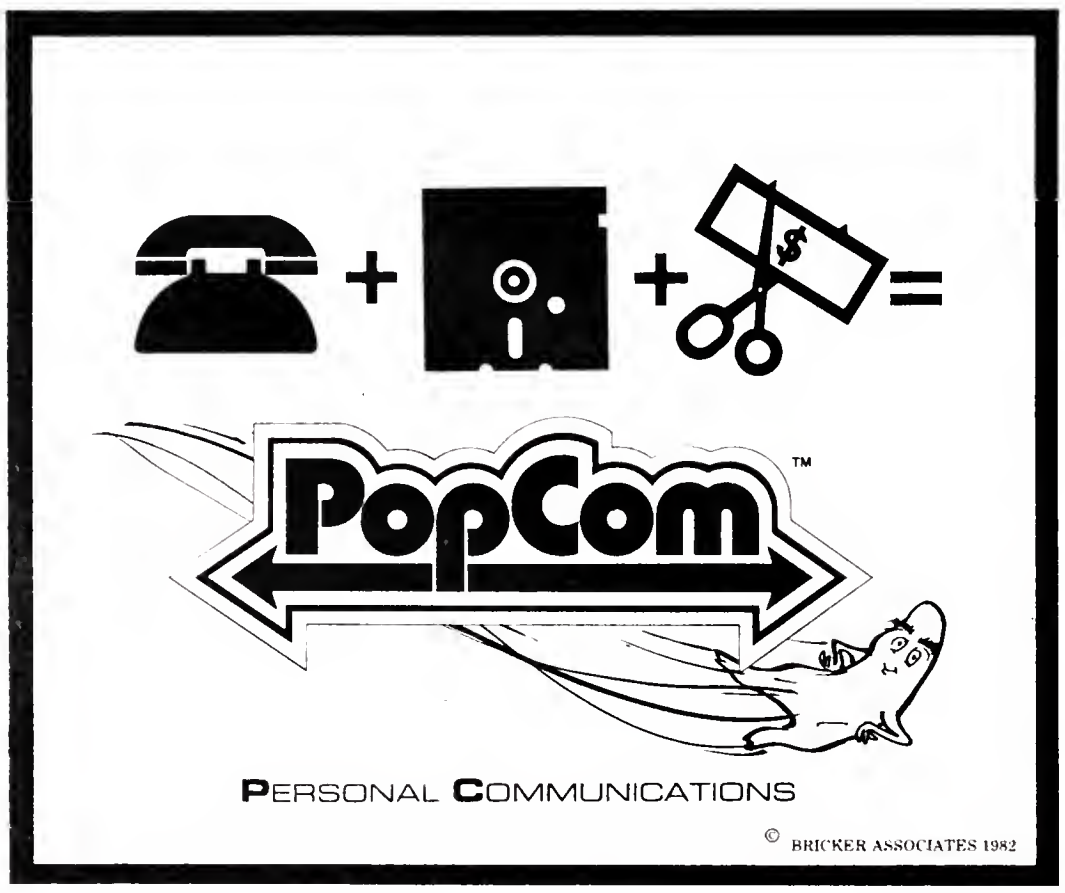
Orange Micro, Inc. will introduce its Buffered Grappler+ printer interface and other products in Booths P7734-P7738.

The interface reportedly features an expandable printer memory and is said to be compatible with Apple Computer, Inc.'s Apple II, II+, IIe and III computers.

The Buffer Grappler product incorporates 23 different printing features and a 16K-byte upgradable buffer. Memory expansion is achieved on the product with the addition of memory chips.

The memory features of the Buffered Grappler are controlled by an on-board micro.

It costs $239, from 1400 N. Lakeview Ave., Anaheim, Calif. 92807.



"TALK TO ME"

Touch Tone/Voice Response for your IBM System 34/38

- Communicate directly with your IBM data base
- 240 word vocabulary available
- Applications for sales, services, banking, shipping and more



Call today for a demonstration and more information.

Access Telecom

60 Shore Drive • Burr Ridge, Illinois 60521

Telephone 312/920-7920

Aviv Corp.

Aviv Corp. will be showing in Booth D208 four disk controllers for use with Digital Equipment Corp.'s Unibus, Q-Bus-based and VAX-11/750 computers, as well as its entire line of single-board magnetic tape controllers for DEC and Data General Corp. equipment.

The Model DFC 807 and DFC 907 controllers, which emulate DEC'S RM03/05 and RK06/07 operating systems, provide LSI-11/23 users with transparency to all DEC and Unix operating systems. Emulating the RM03/05 and RP06 operating systems, the DFC-607 controllers allow communication with the VAX-11/750-CMI.

The vendor's line of single-board magnetic tape controllers also interface with all DEC Unibus and Q-Bus-based systems as well as with DG's Nova and Eclipse minicomputers, a spokesman said.

The disk controllers are being displayed publicly for the first time, the company said from 26 Cummings Park, Woburn, Mass. 01801.

Centronics Data Computer Corp.

Centronics Data Computer Corp. will exhibit its line of printers in Booth N3600.

Along with the company's existing line of printers and print stations, two new products will be displayed: the 350 series' 358 print station and automatic sheet and envelope feeder, and the Line Writer Series 400 line printer, the vendor said.

The price of the print stations for end users ranges from $2,195 to $3,150. The OEM price for the dot matrix printers (not available to end users) ranges from $795 to $995. The OEM price for the E-Series Model III band line printer is $17,550; the Series 400 line printer costs $4,850, the vendor said.

Centronics is located at One Wall St., Hudson, N.H., 03051.

Ex-Cell-O Corp.

At Booth W6395, attendees will be able to view two half-height 5¼-in. flexible disk drives from Ex-Cell-O Corp.'s Remex Division.

The Slimline RFD 485 and RFD 965 double-sided drives are said to feature self-centering clutch and spindle design and are Ansi-compatible.

The RFD 485 features 48 track/in. and a 5-msec track-to-track access time, while the RFD 965 is said to have 96 track/in. and a 3-msec track-to-track access time, according to the vendor.

The RFD 485 costs $295 and the RFD 965 costs $360 from the firm at 1733 Alton St., Irvine, Calif. 92714.

Printronix, Inc.

Printronix, Inc. will exhibit its six printers, including two new models, at Booth W6188. New products include the high-resolution Model 4160 matrix line printer/plotter and a floor model of the 600 line/min P-600 matrix impact line printer.

The 150 line/min P-150, the 300 line/min P-300 and the 600 line/min P-600 feature expandable 96-char. Ascii sets and full plotting and graphics capability. The P-150 costs $4,695; the P-300 costs $5,595; and the P-600 costs $7,695.

The MVP is a matrix impact line printer that offers operator- and computer-selectable speeds of 80-, 150- and 200 line/min, depending on application. The unit costs $3,745.

The Model 4160 is said to combine small dot size and large dot overlap, making it useful for high resolution, graphics, precision industrial bar code labels and business forms and printing. The unit costs $5,830.

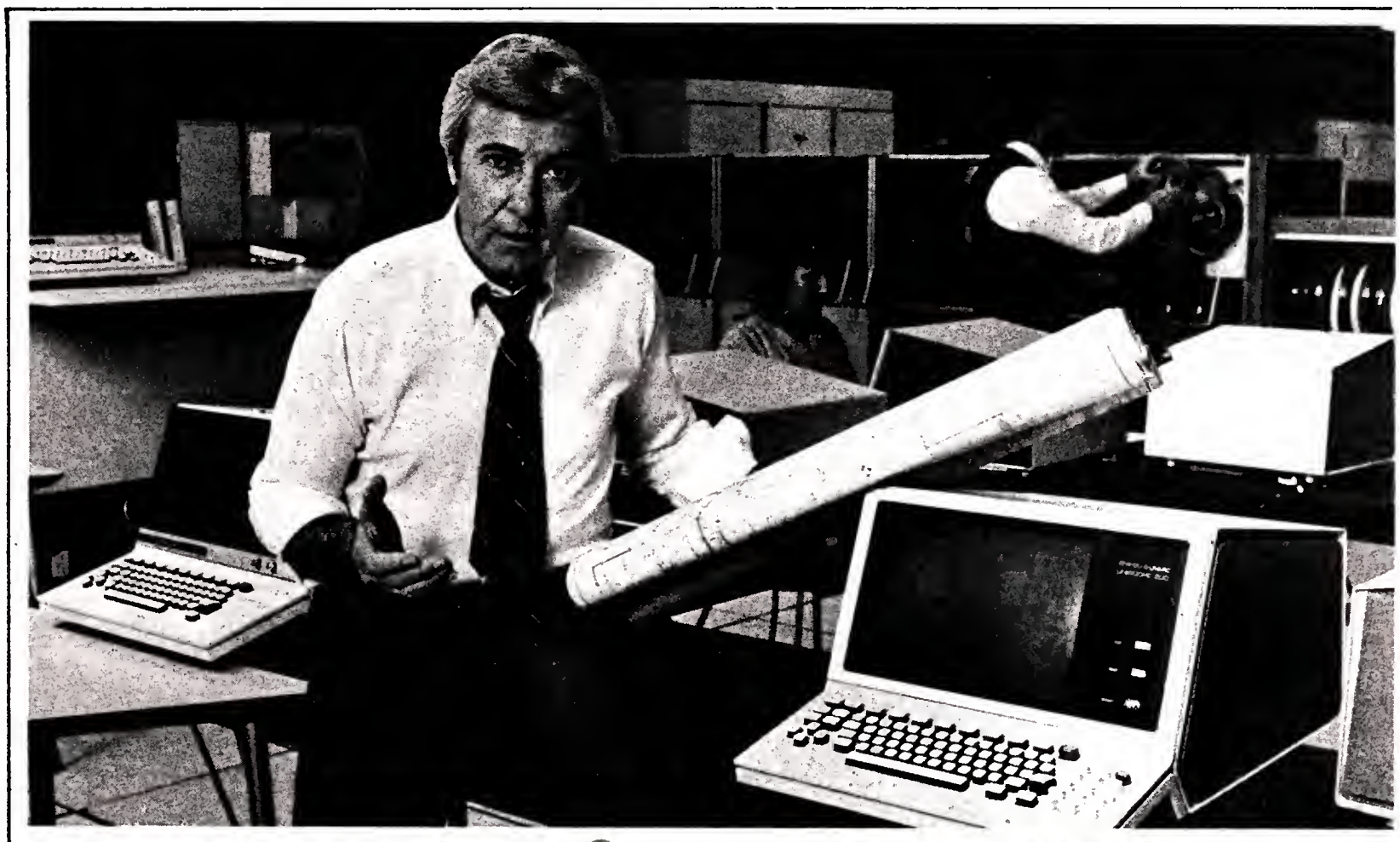
The P-600 floor model cabinet reportedly features 55 dba acoustic noise. No price has been set on the product. The vendor's address is P.O. Box 19559, Irvine, Calif. 92713.

Kennedy Co.

A seven-track cartridge transport from Kennedy Co. will make its debut in Booth N3616. The Model 6470 is said to employ fixed heads to reduce mechanical complexity while improving read and write data reliability.

The unit is said to have a formatted capacity of 40M bytes with 450-ft tape-length cartridges or 50M bytes with a 600-ft tape-length cartridge. Time to transfer 40M bytes reportedly is 18 minutes.

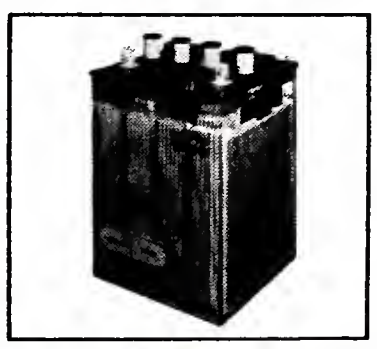
The transport costs $2,000 with formatter from 1600 Shamrock Ave., Monrovia, Calif. 91016.



"OUR C & D COMPUTER BACK-UP POWER SYSTEM SAVED US FROM SEEING RED WHEN THE LIGHTS WENT OUT."

A break or other variance in AC voltage lasting just one nanosecond can destroy the accuracy of computer programs in progress. A few seconds longer and memory banks, storing data worth tens of thousands of dollars, could be wiped clean. Outages may even cause expensive hardware damage. Now, with a UPS (Uninterruptible Power Source) using C & D batteries, you can provide the on-line power necessary to save valuable computer data and equipment during a momentary surge or blackout.

Because when the lights go out, reliable battery power from a UPS may be all that stands between a profitable computer installation and financial disaster. Specify dependable C & D batteries and you'll discover the reasons why so many Fortune 500 companies have made C & D North America's leading supplier of industrial batteries...



Reliable, On-line Power—C & D cells provide 20 years or more of dependable on-line power.

Compact Systems—C & D's exclusive 4LCW battery requires 40% less space than other systems.

Longer Water Intervals—C & D batteries operate with watering intervals of up to 2 years.

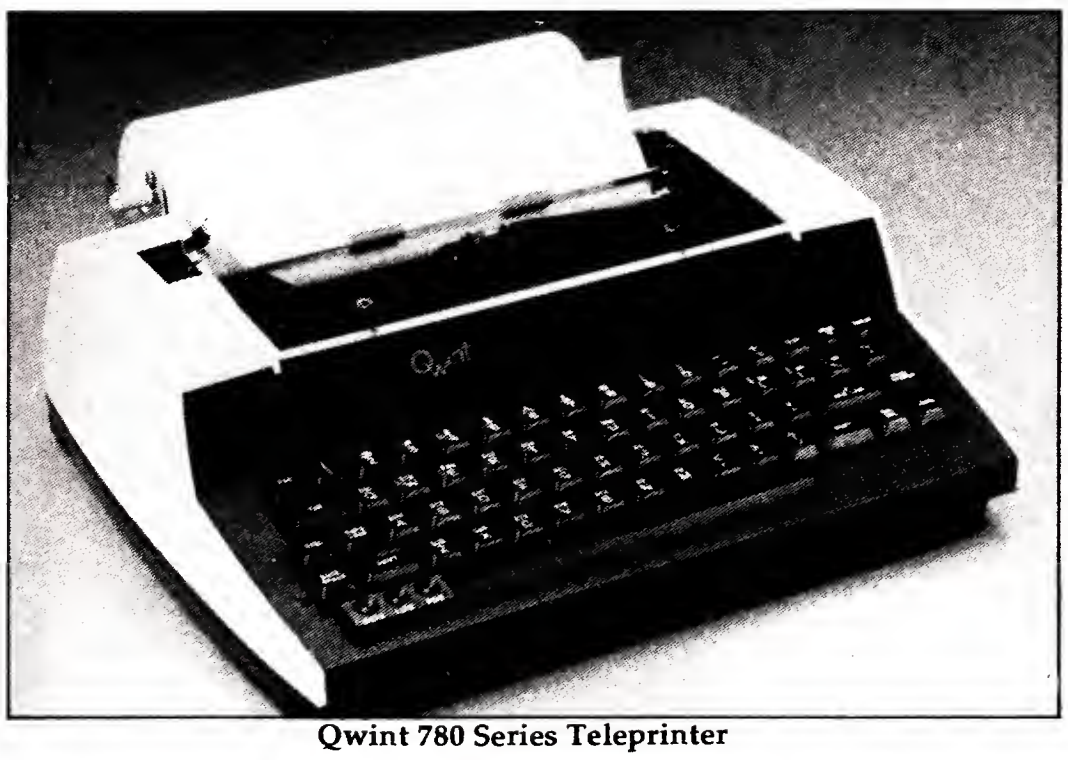
Superior Electrical Conductivity—C & D's unique copper post inserts improve connection integrity and high discharge rate performance.

Expert Installation and Maintenance—75 offices nationwide put specially trained service personnel as close as your telephone.

For more information on UPS batteries from C & D, or any other industrial battery need, check the Yellow Pages for the C & D office nearest you.

C&D Batteries
An ALLIED Company

3043 Walton Road, Plymouth Meeting, PA 19462
LEADER IN BATTERY ENERGY SYSTEMS


Qwint 780 Series Teleprinter

Qwint Systems, Inc.

Qwint Systems, Inc. will display its 780 series of teleprinters including receive-only, keyboard send-receive and memory send-receive models for portable or desktop applications in Booths P7354-P7360.

The Digital Equipment Corp.-compatible units are said to feature 120 char./sec speeds.

They are reportedly keyboard or downline configurable for all standard communications protocols and can include a built-in keyboard and autodial, autoanswer modem for direct connection to direct-distance dial, TWX, telex or international telex.

Electronic mail and graphics features are included. Standard interfaces include EIA, CCITT V.24 and direct current loop.

Prices range from $795 to $2,295 from 3693 Commercial Ave., Northbrook, Ill. 60062.

Micro Technology, Inc.

Micro Technology, Inc. will be displaying a 22-bit, LSI-11-compatible floppy disk controller as well as their first fully compatible 5¼-in. Digital Equipment Corp. subsystem in Booths D2005-D2007.

The 22-bit MXV22 controller, priced at $990, accommodates up to four disk drives and up to 1M bytes of formatted data per drive.

The 5¼-in. MD4000, which is modeled after its predecessor, the 8-in. MD3000, enables users to select the capacity, quantity and mix of floppy or Winchester disk drives that best satisfies a particular system's requirements.

The price range of the MD4000 is $3,500 to $7,000, depending on the configuration chosen, the company said, from 1620 Miraloma Ave., Placentia, Calif. 92670.

Data Printer Corp.

Data Printer Corp. will be showing its line of band printers at Booth N3748.

On display will be a redesigned version of the firm's 2,000 line/min band printer. The unit is said to feature improved print quality, diagnostic routines and improved paper handling. The printer can be used with 48-, 64-, or 96-char. sets and costs $18,000.

Also on display will be the firm's 3001 series of band printers. The units offer print speeds between 600 and 1,200 line/min and use a 64-char. band. The 3001 series costs between $8,000 and $15,000 from 99 Middlesex St., Malden, Mass. 02148.

Raymond Engineering

Raymond Engineering, Inc. will be showing its line of tape drives at Booths N4105 and N4106.

Included in the display will be the firm's Series WR-100 streaming tape drive, a digital cassette recorder with a 10M-byte formatted capacity. The unit can be used as a direct replacement for a standard 5¼-in. floppy disk drive.

The unit costs $500, the vendor said.

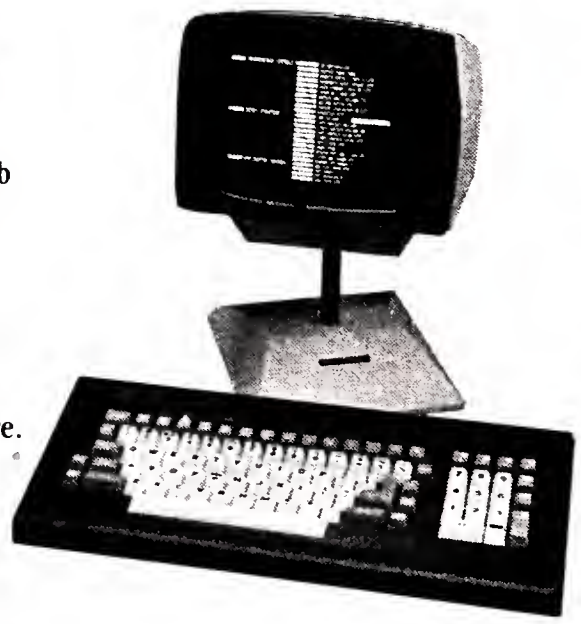
Also on display will be an intelligent interface option for the WR-100. The microprocessor-based controller, two WR-100 drives and interconnecting cables cost $1,495, the vendor said from 217 Smith St., Middletown, Conn. 06457.

The great impostor.

Most terminals live a very humdrum sort of life. They're purchased to shake hands with only one type of computer...doomed to go through life repeating one protocol over and over.

Our new Model 7 is more resourceful. We gave it loadable controls, so you can make it talk to almost any computer. Down line load or enter the control sequences you need from the keyboard...change it when you want to. If you need a dumb terminal, make it impersonate a Lear Siegler, a Televideo, a Hazeltine, or a DEC. Need a smart terminal? Tell it to be an older model Teleray, an IBM, or an HP. The Model 7 is so crafty, your computer will never know the difference.

The Model 7 is a lot more than just a great impostor, too. It gives you Teleray's exclusive HOT BUTTONS™ so you can redefine the keyboard to meet your preferences and special applications. Its non-volatile programmable memory lets you recode any of thirty-two keys to execute the special characters, sequences, or functions you need.



The super-smart Model 7 gives you full editing capability. 25-lines x 80-columns. ANSI X3.64 and an alternate user definable ASCII compatability. Two (optionally four) user configurable display pages. Horizontal and vertical smooth scrolling. Scientific notations. Line and mosaic graphics. Standard and oversized characters, and much more. We even taught it how to play music, so you can alert, remind, or reinforce the operator with flair.

Call 612-941-3300 or write for more information on The Great Impostor...it does what other terminals only dream about.

The Model 7. An undisguised advancement.

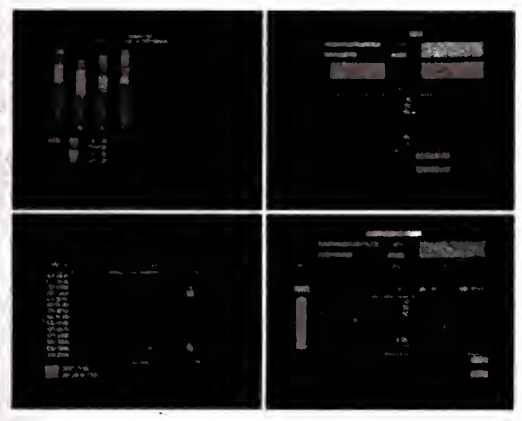
TELERAY
DIVISION OF RESEARCH INC
BOX 24064 MINNEAPOLIS, MINN. 55424

THE FIRST TRULY LOW COST COLOR TERMINAL.

VIEWPOINT®/// COLOR

Now you don't need to go in the red to get a color display terminal. You can have a full-size, 13" Viewpoint /// Color terminal for $1295 (quantity one), which is what some manufacturers want for just monochrome.

Take a look at these vivid business graphics, brilliant charts, and exciting text ideas. With Viewpoint /// Color, you get the faster comprehension and improved retention that color offers, plus all the advanced microtechnology and family compatibility you expect from ADDS.



You can adjust the Viewpoint /// Color tilt-and-swivel screen to make it comfortable to read. Plus there's an adjustable angle keyboard, with a convenient stretch cord, that lets you work on any surface – including your lap. And there's a separate key cluster for fast numeric entry and easy cursor control.

If you've been waiting for the cost of color to come down, your patience has paid off.

Viewpoint /// Color. It can save you a lot of green.

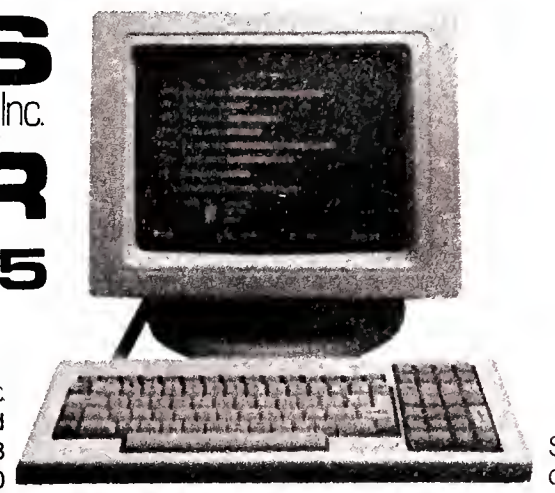
SOMETHING EXTRA IN EVERYTHING WE DO.

ADDS
Applied Digital Data Systems Inc.

VIEWPOINT/// COLOR

Ask us about the new **VIEWPOINT/// COLOR 925**

See us at NCC Booth N-3706.



Applied Digital Data Systems Inc.
100 Marcus Boulevard
Hauppauge, N.Y. 11788
Tel. (516) 231-5400

Subsidiary of NCR

Viewpoint® is a registered trademark of Applied Digital Data Systems Inc.

Panasonic

Panasonic will display at Booth N3556 its line of data processing peripherals, including printers, plotters and data collection systems.

Among the products will be:

- VP-6801P color plotter for business graphics ($1,995).
- CT-160 dual-mode 10-in. color computer display ($400).
- TR120M1P high-resolution monochrome display ($220).
- Data Collection System family for recordkeeping, security monitoring and job reporting as well as inventory control applications ($1,500 to $2,400).

Panasonic is located at One Panasonic Way, Secaucus, N.J. 07094.

Printacolor Corp.

The TC-1040 color ink-jet printer from Printacolor Corp., said to produce more than 4,900 different hues on standard bond paper of various widths, will be the attraction at Booth P7934.

The TC-1040 features user-loadable lookup tables for specifying colors. The unit prints horizontally at either 85 dot/in. or 120 dot/in. and vertically at 85 dot/in.

Paper width is variable from 5.5 in. to 15.75 in. by an adjustable pin-feed mechanism, according to the vendor.

Print speed is said to average 108 raster in./sec.

The unit interfaces via either an RS-232 or Centronics Data Computer Corp.-type I/O port.

The TC-1040 costs $6,995 from 5965 Peachtree Corners E., Norcross, Ga. 30071.

Measurement Systems, Inc.

Measurement Systems, Inc. will be exhibiting its line of trackball products, hand controls and joysticks at Booth N4214.

The Model 636 Trackball reportedly provides a third output proportional to the theta or rotational motion in addition to the usual X and Y components of ball motion.

The Model 531 Joystick, a two-axis, potentiometer-type stick, has been expanded to include an environmental boot seal and conductive potentiometers with plastic center taps, according to a vendor spokesman.

The new 404 series of multiaxis, force-operated hand controls, also available with a choice of six different handgrip configurations, features four primary axes that can be expanded to 10 proportional outputs, the vendor spokesman said.

The hand controls range in price from $4,000 to $12,000 each.

The joystick ranges from $300 to $800.

The trackball ranges from $2,000 to $3,800, said the vendor spokesman.

Measurement Systems, Inc. is located at 121 Water St., Norwalk, Conn. 06854.

Data Specialties, Inc.

Data Specialties, Inc. will be displaying its Zebra Demand Printer at Booth N3714.

The Zebra Demand Printer reportedly prints and dispenses labels, tickets and tags. The high-speed, impact dot matrix printer is called the Zebra because of its bar code printing capability, the vendor said. The Zebra also produces alphanumeric characters and optical character recognition.

The RS-232C interface allows the Zebra to be connected to CRTs, microcomputers and large mainframe systems, the vendor noted. The Zebra Demand Printer is available immediately and priced from $3,470. Further information can be obtained from the vendor at 3455 Commercial Ave., Northbrook, Ill. 60062.

Emulex Corp.

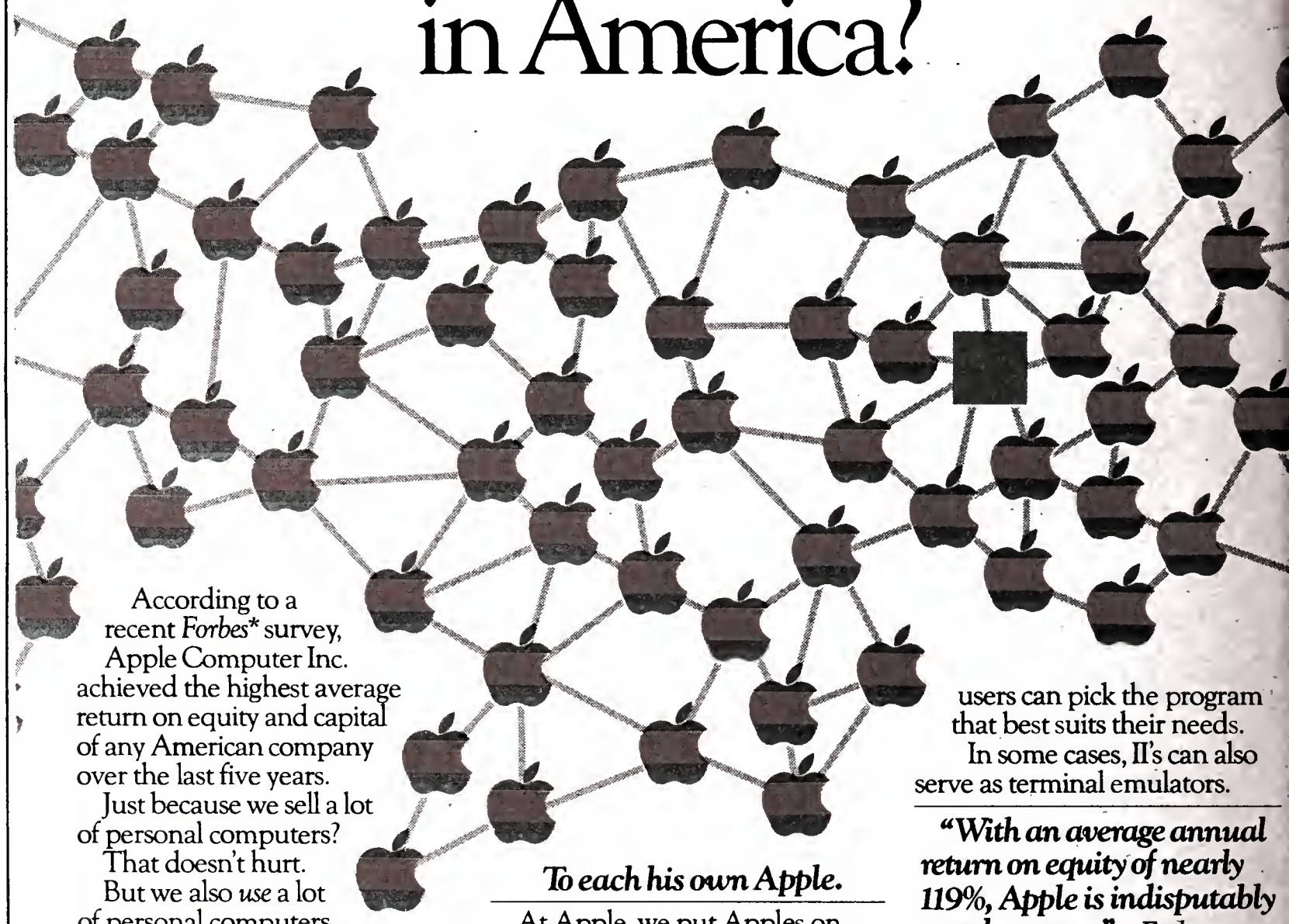
In Booth A3100, Emulex Corp. will introduce a line of high-performance, mass-storage subsystems providing combined disk and tape capability in a 42-in. cabinet. Called the FXS51, the subsystem line unites Emulex's Digital Equipment Corp.-compatible disk and tape controllers with Fujitsu Ltd.'s M2351A Eagle disk drive and Control Data Corp.'s 92181 Keystone tape drive. The subsystems are available for the DEC VAX-11/730, 750 and 780.

The company will also display the CS11/F and CS21/F multiplexers for the VAX-11, which add DEC's DMF-32 communications controller capability to Emulex's CS11 and CS21 multiplexers, priced from $35.000.

The company can be reached at P.O. Box 6725, 3545 Harbor Blvd., Costa Mesa, Calif. 92626.

First in a series of reports on the role of personal computers in the office.

What's the secret behind the most profitable company in America?



According to a recent *Forbes** survey, Apple Computer Inc. achieved the highest average return on equity and capital of any American company over the last five years.

Just because we sell a lot of personal computers?

That doesn't hurt.

But we also *use* a lot of personal computers.

Over 3500 Apples.* All part of a cost-efficient and productive information system.

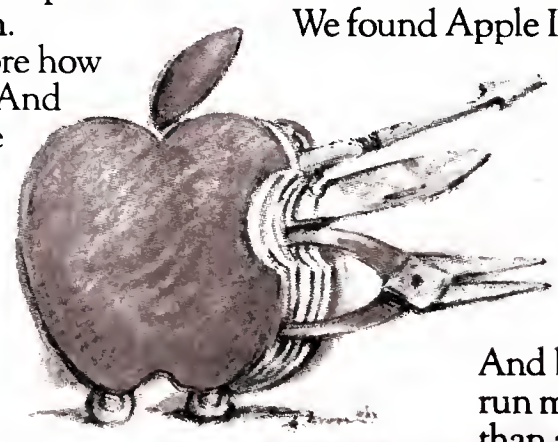
Here, we'll explore how this system works. And how companies like yours can make the transition to personal computers smoothly and successfully. No theories or fantasies. Just facts, from our own fruitful experience.

To each his own Apple.

At Apple, we put Apples on every desk. The nature of the work determines the nature of the Apple.

We found Apple II's (and now Apple IIe's) to be the most affordable solution for most of our dedicated, ready-to-run applications. And because they run more software than any other personal computer, users can pick the program that best suits their needs.

In some cases, II's can also serve as terminal emulators.



Apple comes to you with nationwide on-site service and support.

"With an average annual return on equity of nearly 119%, Apple is indisputably number one..." *— Forbes*

Apple III's, with even more memory and processing capability, offer us important standalone virtues. Including an impressive choice of powerful management tools—from word processing to presentation graphics.

The III can also serve as a sophisticated terminal emulator. (Apple's new Protocol Converter can handle most 3270 series terminals, so any Apple can communicate with mainframes—in our case, an IBM 4341-2.)

Key Tronic Corp.

Booth W6270 will be the site for Key Tronic Corp.'s unveiling of four keyboard products.

An optical mouse, voice input and optical character recognition options will be offered as data entry devices to be integrated with the firm's keyboard-based data entry system.

Also demonstrated will be the capability to package complete terminal electronics within a custom keyboard. As an example, the firm will demonstrate an enclosed low-profile keyboard that reportedly offers Digital Equipment Corp. VT100 compatibility.

All four options can add up to $800 to the price of a custom keyboard. The keyboards are priced from $270 to $300 from the firm at P.O. Box 14687, Spokane, Wash. 99214.

TDX Peripherals

The TDX Peripherals Division of GAW Control Corp. will be displaying its TDX ½-in. magnetic tape drive at Booth P7336.

The TDX ½-in. tape operates at 75 in./sec and is fully IBM- and Ansi-compatible. Features include a floating shuttle tape buffer and microcomputer-based embedded formatters for each recording format. The units cost from $4,700, the vendor said.

TDX Peripherals is located at 148 New York Ave., Halesite, N.Y. 11743.

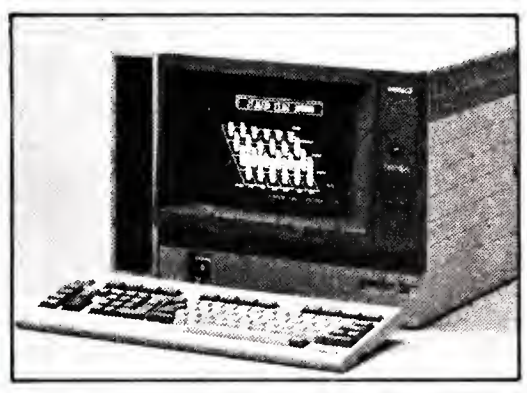
Memorex Corp.

In Booth S5492, Memorex Corp. will exhibit its disk and tape drives, display stations and color display station with graphics. The firm will also be showing a number of its printer products and controllers, as well as its flexible disk media, computer tape products and rigid disk drives.

The price of the 3680 disk drive is $47,340; the 3260 tape drive costs $57,450; the 2078 display station sells for $1,680; the 2079 color display station with graphics is $3,289.

Finally, Memorex's 2087 printer costs $5,320, and the 2076 controller is $4,030. Memorex is located at San Tomas Central Expwy., Santa Clara, Calif. 95052.

Canon U.S.A., Inc.



Canon U.S.A.'s Color Ink Jet Printer

Canon U.S.A., Inc. will be exhibiting its recently developed Color Ink Jet Printer here in Booth P7625.

This product, designated Model A-1210, uses paper and a large capacity dual-cassette ink supply for printing in seven colors, according to the vendor.

It produces 40 standard and enlarged char./sec, 640 dot/line resolution color printing, image printing and also boasts hard-copy functions, the vendor said.

The Canon printer costs $795, the vendor said from One Canon Plaza, Lake Success, N.Y. 11042.

Wintek Corp.

Wintek Corp. will be showing its newly announced, single-board microcomputer based on the Motorola Corp. 6809 microprocessor at Booth S5029.

Called the 6809 Control Module, the unit was designed for a variety of applications including dedicated control, protocol conversion, instrumentation, communications and robotics, the firm said.

The 6809 Control Unit costs from $245, the vendor said from 1801 South St., Lafayette, Ind. 47904.

Alpha Data, Inc.

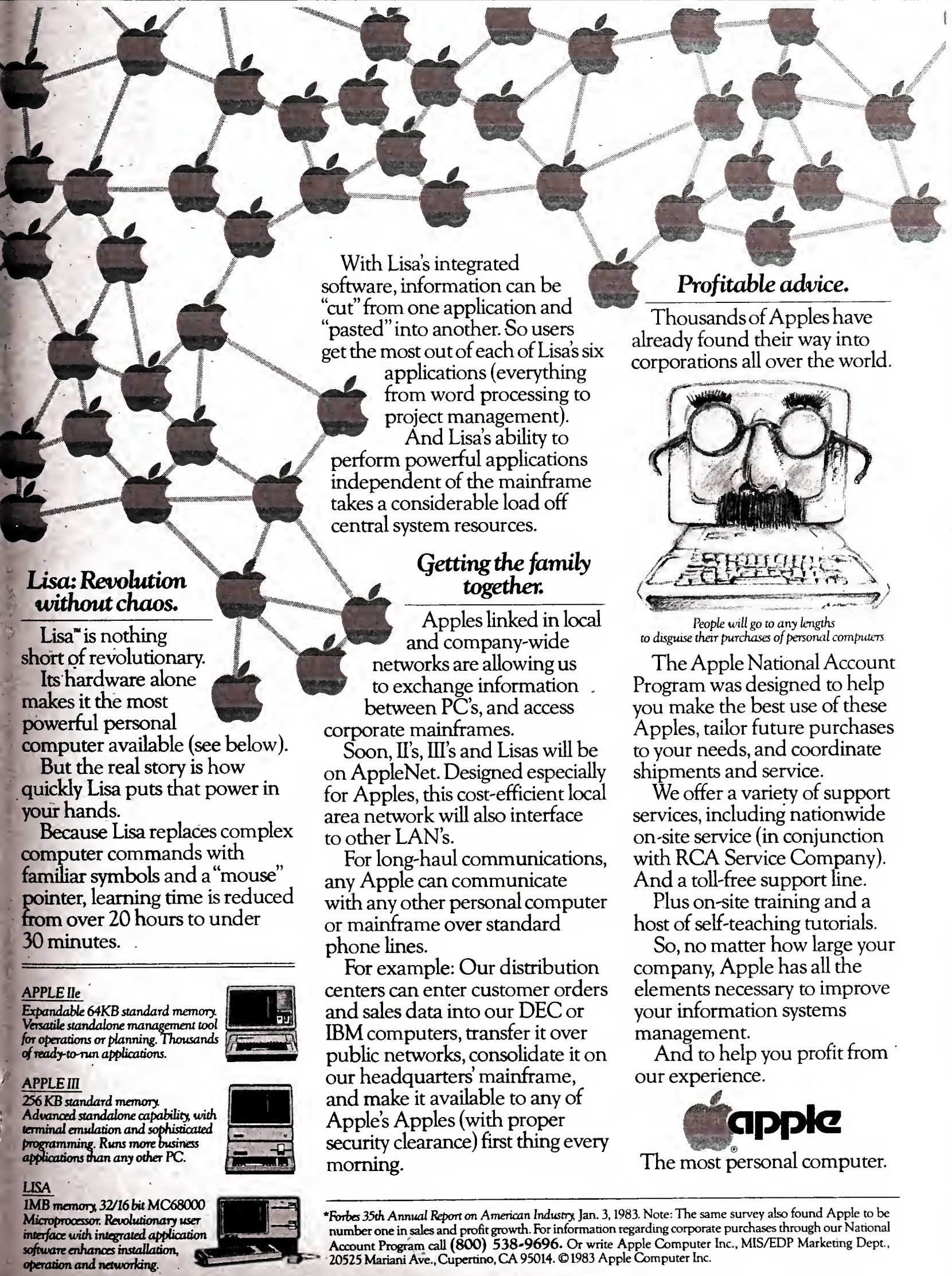
Alpha Data, Inc. will show its 128M-byte disk drive and M/Core nonvolatile memory at Booth S5031.

The company's 14-in. disk drive features 18-msec average access time and 1M-byte cylinders, according to the vendor.

The M/Core memory is designed for use in harsh environments and can be configured in 256K-byte increments, the vendor said.

The disk drive is priced at $8,500 and M/Core at $17,923 per 1M-byte, the vendor said.

Alpha Data is located at 20750 Marilla St., Chatsworth, Calif. 91311.



With Lisa's integrated software, information can be "cut" from one application and "pasted" into another. So users get the most out of each of Lisa's six applications (everything from word processing to project management).

And Lisa's ability to perform powerful applications independent of the mainframe takes a considerable load off central system resources.

Lisa: Revolution without chaos.

Lisa™ is nothing short of revolutionary.

Its hardware alone makes it the most powerful personal computer available (see below).

But the real story is how quickly Lisa puts that power in your hands.

Because Lisa replaces complex computer commands with familiar symbols and a "mouse" pointer, learning time is reduced from over 20 hours to under 30 minutes.

Getting the family together.

Apples linked in local and company-wide networks are allowing us to exchange information between PC's, and access corporate mainframes.

Soon, II's, III's and Lisas will be on AppleNet. Designed especially for Apples, this cost-efficient local area network will also interface to other LAN's.

For long-haul communications, any Apple can communicate with any other personal computer or mainframe over standard phone lines.

For example: Our distribution centers can enter customer orders and sales data into our DEC or IBM computers, transfer it over public networks, consolidate it on our headquarters' mainframe, and make it available to any of Apple's Apples (with proper security clearance) first thing every morning.

Profitable advice.

Thousands of Apples have already found their way into corporations all over the world.

People will go to any lengths to disguise their purchases of personal computers.

The Apple National Account Program was designed to help you make the best use of these Apples, tailor future purchases to your needs, and coordinate shipments and service.

We offer a variety of support services, including nationwide on-site service (in conjunction with RCA Service Company). And a toll-free support line.

Plus on-site training and a host of self-teaching tutorials.

So, no matter how large your company, Apple has all the elements necessary to improve your information systems management.

And to help you profit from our experience.

apple

The most personal computer.

APPLE IIe

Expandable 64KB standard memory. Versatile standalone management tool for operations or planning. Thousands of ready-to-run applications.

APPLE III

256 KB standard memory. Advanced standalone capability, with terminal emulation and sophisticated programming. Runs more business applications than any other PC.

LISA

1MB memory, 32/16 bit MC68000 Microprocessor. Revolutionary user interface with integrated application software enhances installation, operation and networking.

*Forbes 35th Annual Report on American Industry, Jan. 3, 1983. Note: The same survey also found Apple to be number one in sales and profit growth. For information regarding corporate purchases through our National Account Program call (800) 538-9696. Or write Apple Computer Inc., MIS/EDP Marketing Dept., 20525 Mariani Ave., Cupertino, CA 95014. ©1983 Apple Computer Inc.



Honeywell announces help for companies besieged by an army of personal computers.

"Overrun."
"Invaded."
"Swamped."

DP managers use a variety of terms to describe the arrival of so many different personal computers on the business scene. But the feeling is always the same.

After all, most managers have spent *years* developing well-controlled information systems. Now, almost overnight, they are losing control.

And while there's no arguing that PCs are valuable tools for individual productivity, everyone would prefer a more integrated approach for the company.

What's needed is a system that combines corporate data base capability with the personal computer capabilities employees now insist upon. A system with the capacity to extend the functionality of the corporate network to the individual local level. This is exactly what Honeywell has built.

The microSystem 6/10.

The cost-efficient microSystem 6/10 is a multi-personality workstation that provides an impressive range of functions – including networking.

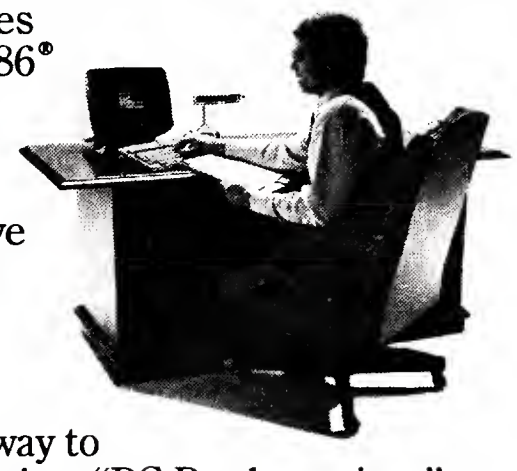
Besides personal computing, the system handles data processing and word processing. It can function as a network end-point and a terminal emulator. What's more, power and flexibility make the microSystem 6/10 perfect for adaptation to industry-specific applications.

The microSystem 6/10 ensures organizational unity through excellent communications – it talks to IBM mainframes as readily as to our own.

It also offers expandable hardware and our time-proven GCOS operating system, which is compatible across the entire range of Honeywell minicomputer products, including even the most powerful 32-bit systems. This compatibility assures easy progress along your growth path by eliminating the need to recreate applications and retrain personnel.

Fight fire with fire.

Best of all, perhaps, the microSystem 6/10 will be an immediate hit with employees wed to their PCs. Because it accepts popular software packages based on CP/M-86® and MS/DOS,® chances are your people won't have to give up their favorite programs.



The microSystem 6/10.

Here's the way to win the battle against "PC Pandemonium." And the war for control.

For more information, call **800-343-6294** (within the 617 area, call 895-7572) or write to the Honeywell Inquiry Center, 200 Smith Street (MS 440), Waltham, Massachusetts 02154.

Together, we can find the answers.

Honeywell

Come and see the new microSystem 6/10 at NCC.

CP/M-86 is a registered trademark of Digital Research, Inc. MS/DOS is a registered trademark of Micro Soft, Inc.

Power Systems

Computer Power Systems Corp.



Micropower II

Computer Power Systems Corp. will be demonstrating its newly developed power distribution peripheral for small- to large-scale computer systems in Booths W6011-W6015.

Called System III, the product is said to provide flexibility in creating an approved power structure for computers. It is built to keep the computer performing at maximum efficiency at all times, with a status panel and audio alarms that continually monitor certain parameters of the computer power structure, the vendor explained.

Pricing on the System III ranges from $5,000 to $18,000, depending on configuration.

Also on display will be the vendor's power conditioner for minicomputers and small business systems, called Micropower II. This product provides the user with voltage regulation and isolation features, the vendor said. It costs between $1,800 and $3,800.

Finally, the vendor will be showcasing its Line Trac II voltage stabilizer, priced from $6,500 to $13,500, and an isolation transformer for medium- to large-size computer systems called Iso-Max, priced from $1,100 to $3,500.

For further details, Computer Power Systems can be reached through P.O. Box 6240, Carson, Calif. 90749.

Superior Electric Co.

Superior Electric Co. will be at Booths N4600-N4604 demonstrating a new model of its Stabiline AC Voltage Monitor.

The monitor features a detachable detector module that allows monitoring of single- or three-phase power lines. For three-phase applications, the system monitors all phases, and different sag, surge, low-average, high-average and impulse levels can be set for each channel. The system can monitor 120V, 208-240V or 480V ac power lines and can also check dc power sources up to 10V. Thresholds for each channel can be set independently, so 120V, 240V and 480V single-phase lines can be monitored simultaneously, the vendor claimed.

The system consists of the company's Remotector detector module and a microprocessor-based printer/controller module. Threshold limits, calendar and clock settings and the monitor identification number can be entered with push-button keys. The Remotector unit can be left at a site to perform its monitoring functions.

A complete system costs $5,900 with each additional detector module priced at $2,900 from Superior Electric, based at 383 Middle St., Bristol, Conn. 06010.

Sola Electric

Sola Electric will be demonstrating its new 5 kVA uninterruptible power system (UPS) that uses solid-state design said to offer higher efficiency, tighter regulation, near-unity input power factor and reduced input current distortion. The UPS will be on display in Booths N3559-N3565.

The unit provides conditioned ac power, including isolation from noise and transients, as well as reserve battery backup during total line failure, a spokesman said.

An internal solid-state bypass transfer automatically switches the load directly to the utility power line when load demands exceed system overload capacity of 200% for 167 msec. The system is said to maintain phase match between UPS output and bypass line to assure "no-break" transfer. Normal operation is automatically restored with correction of overload condition.

The UPS is available in a 60Hz model with I/O at 120 Vac, single-phase two-wire; 120V/240 Vac, split single-phase three-wire; or 208 Vac, single-phase two-wire. Cost of the unit is $14,000 from 1717 Busse Road, Elk Grove Village, Ill. 60007.

Topaz, Inc.

Topaz, Inc. will be introducing three power systems at Booths N3539-N3543.

The Topaz Electronics Division (TED) will unveil the Powermaker Micro uninterruptible power system, said to be a standby power system designed to protect small business computers against blackouts, voltage sags and power-line noise. Available in 50Hz and 60Hz models and in power ratings of 400VA and 800VA, prices start from $695.

TED will also introduce Line2, a three-phase power conditioner designed to protect computers and peripherals against power-line noise and voltage variations. Available in 50Hz or 60Hz operation and in power ratings from 10 kVA to 30 kVA, prices range from $7,350.

The Maximum Value Powercenter (MVP) will be introduced as well. It is said to be a computer room power distribution system designed to meet or exceed all standard industry specifications. MVP is available in power ratings of 100-, 125- and 150 kVA. Prices start at approximately $12,000, the vendor said through P.O. Box 81187, 3855 Ruffin Road, San Diego, Calif. 92123.

Atlas Energy Systems

Atlas Energy Systems in Booth W6592 will display its recently announced MPC Powerpod that combines the features of a rotary power conditioner and power distribution system.

Taking up a 34- by 38-in. area, the system's synchronous motor provides a constant frequency of within ±1% despite changes in load. The system can absorb prolonged voltage sags and surges up to ±40% in addition to providing 250 msec of power continuity ride-through in the event of a total power failure. The Powerpod also features a separate single-point ground which eliminates the need for an isolation transformer.

The product is available in sizes ranging from 10- to 75 kVA with prices starting at $10,000, the vendor said from 9457 Rush St., South El Monte, Calif. 91733.

Cyberex, Inc.

Cyberex, Inc. will unveil an information system for uninterruptible power systems in Booths N4501-N4503.

Called Advanced Information System for EDP Managers (Advise), the system is said to provide comprehensive information on the electric power supply for data center operations.

It offers both visual and optional hard-copy information on system status and can display voltage, current and frequency readings, the vendor said. Advise ranges in price from $5,000 to $25,000, depending upon options.

Cyberex will also be showcasing its newly developed Transistorized Uninterruptible Power System, which promises efficiency and reliability along with fast response time to power fluctuations. Pricing is not yet available, according to a vendor spokesman. Cyberex is located at 7171 Industrial Park Blvd., Mentor, Ohio 44060.

Dymarc Industries, Inc.

Dymarc Industries, Inc. will show its line of voltage regulators at Booths P7158-P7160.

The line includes Clipstrip and Clipstrip II — six-outlet transient voltage protected strips — which can dissipate up to 5,000 transient/sec. The units come with a master on/off switch and have a resettable circuit breaker. The units cost $124.50.

Also on display will be the firm's T-25 Clipper, a transient voltage suppressor for RS-232 data transmission lines. The device was designed to protect against transients and surges which might inter the RS-232 interface of an unprotected host system. The unit can protect between two and five lines and costs between $135 and $299, the vendor said.

Also, the firm will be showing the Clip-Cube, a load regulator conditioner. The units are rated at better than 95% efficiency and are available in power ratings ranging from 750VA to 1,500VA. The Clip-Cube costs between $633 and $795, the vendor said from 9 E. 38th St., New York, N.Y. 10016.

Please send me COMPUTERWORLD for one year. RATES: United States $44; Canada, Central & South America $110; Europe $165; All Other Countries $245 (Airmail Service)

☐ Check Enclosed

PLEASE CIRCLE 1 NUMBER IN EACH CATEGORY

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 709 FRAMINGHAM, MA 01701

postage will be paid by

CIRCULATION DEPARTMENT

COMPUTERWORLD

375 Cochituate Road, Rte. 30
Box 897
Framingham, MA 01701-9985

No Other Publication Gives You SO MUCH Timely News, Money-Making Ideas & Management Information—

***PLUS** Specials! Bonus Issues!*
All Included In The Basic Low Subscription Price

COMPUTERWORLD

COMPUTERWORLD, America's largest specialized business publication, is a weekly newspaper with thorough and timely coverage of news and ideas of interest to computer users in industry, business, government and education. Unlike monthlies, COMPUTERWORLD covers *hundreds* of relevant news items *each week*. *But beyond the "news," you get much more* as a CW reader:

- Weekly "In Depth" articles.
- Monthly "Special Reports" on selected subjects.
- **COMPUTERWORLD OA** with incisive coverage of office automation.
- **COMPUTERWORLD ON COMMUNICATIONS** covers product and system developments in the rapidly changing communications field.
- **COMPUTERWORLD BUYER'S GUIDE SERIES** . . . a comprehensive series of product-specific lists and up-to-date information on each major product area.
- **PLUS** Other Special Issues Throughout The Year!

SUBSCRIBE NOW

Complete Form On Reverse,
Then Return In Attached
Postage-Paid Envelope. Or Use Your
Charge Card and Call
TOLL-FREE: 1-800-343-5730.

☐ **Please enter my subscription (details on back)**

☐ **I'm already a subscriber, but I'd like you to change my:**

☐ **address** ☐ **title**
☐ **industry** ☐ **other**

Put old label or label information here

My current mailing label is attached and I've filled in new information on the other side.

Franklin Electric Co.

Franklin Electric Co. will be displaying in Booth P8126 a line of power line disturbance monitors (PLDM), solid-state power frequency converters, uninterruptible power systems (UPS) and other products for use in power conversion applications.

PLDMs are designed to detect disturbances that exceed sensitivity thresholds, classify them by type, magnitude and duration and tell the user where they occurred. They detect transients, undervoltages, overvoltages, transient direction and polarity, transient duration, frequency errors and power line anomalies.

The Model 3500 laboratory-quality PLDM automatically monitors single- and three-phase ac power lines with nominal voltages from 50- to 600 Vac. The Model 3600A portable programmed PLDM incorporates dual microprocessors and solid-state memory to provide line monitoring in a flexible environment. It can simultaneously monitor three 50- to 800 Vac channels and provide summed, three-phase analysis of an individual line disturbance.

The 400 series frequency converters convert three-phase 50Hz input to 60Hz input and 400Hz output to 415Hz output, the company claimed. They are designed for use with large mainframes.

The System 475 is a solid-state frequency converter designed to replace 400Hz, 75 kVA rotary generators. Systems 475 and 4125 can be programmed to output 400-, 415- or 441Hz and can be run in parallel.

The 600 series UPS provide three-phase 50- or 60Hz input and output in all standard power distribution voltages. They are useful as building blocks for higher rated or redundant systems. The UPS provide an alternative source of power in the event of utility power failure.

The Model 3500 PLDM costs $4,500, the Model 3600A costs $5,800. The System 475 frequency converter costs $42,000 and the 600 series UPS costs $53,000 from the firm's Programmed Power Division, 995 Benicia Ave., Sunnyvale, Calif. 94086.

Shape Magnetronics, Inc.

Shape Magnetronics, Inc. will introduce a compact 10 kVA Line Tamer ferro-resonant transformer and will exhibit the rest of its Line Tamer line at Booth P7809.

The Model CLT-1001-CSO 10 kVA Line Tamer regulating transformer reportedly takes up less than two sq ft of floor space and has I/O voltage of 120V, 208V and 240V, said to be ideal for 208V single-phase disk drives. Single-unit price lists at $3,295, according to a vendor spokesman.

Other line-regulating transformers are available with ratings from 70VA through 2,000VA, the vendor said. Both 50Hz and 60Hz single-phase models are available. Prices range from $186 for a 70VA unit to $1,007 for a 2,000VA unit, the vendor said from 901 DuPage Ave., Lombard, Ill. 60148.

LaMarche, Inc.

In Booth 5560, LaMarche, Inc. will be showing a new line of uninterruptible power systems designed for rack, desktop or wall mounting.

The units reportedly require 80% less space than the company's previous models.

Designed for laboratories, offices and production areas, the LaMarch A52CP series supplies continuous, disturbance-free power regardless of the condition of the ac line, the vendor said.

The units utilize complementary metal oxide semiconductor (Cmos) logic and sine-weighted pulse width modulation. They are equipped with electronic output voltage regulation, quartz time base, 120% current limit and power walk-in, according to a vendor spokesman.

A 500W system costs $2,500, the vendor said from 106 Bradrock Drive, Des Plaines, Ill. 60018.

Dranetz Engineering Laboratories

Dranetz Engineering Laboratories, Inc. will be showing its line of remote monitoring units at Booth 4407.

Included in the display will be the Model 626-RMU-1 single-phase ac monitoring unit and the Model 626-RMU-3 three-phase ac and dc monitoring units. The units were designed to function with the firm's 626 Universal Disturbance Analyzer and can monitor various aspects of microprocessor-based equipment, the vendor said.

The Model 626-RMU-1 costs $1,500 and the Model 626-RMU-3 costs $2,000, the vendor said from 1000 New Durham Road, Edison, N.J. 08817.

C&D Batteries

C&D Batteries, an Allied Corp. company, will show its line of 4LCW/LCW lead-calcium batteries in Booth D1405.

The batteries reportedly feature two-hole posts with copper inserts for greater conductivity, better contact and greater safety. Covers are flame retardant.

Available in seven- to 49-plate models, each of these batteries ranges in price from $200 to $1,200, the vendor said from 3043 Walton Road, Plymouth Meeting, Pa. 19462.

COMBOARD™ /HASP

the high thruput DEC/IBM interconnect

Your high volume data transfers to IBM or CDC centrals are achieved quickly by the COMBOARD 1231 because it supports transfer rates to 56,000 bps over private or leased networks.

Fast transfers between systems means higher productivity in all applications, and is particularly important in critical applications such as computer aided design. Effective system usage is increased as job turn around time is decreased.

COMBOARD is a 16 bit CPU based single board computer that plugs into your DEC UNIBUS™. Then the COMBOARD, not the DEC host, handles all the real-time interrupts and protocol processing associated with data communications.

COMBOARD 1231 is the high speed model in the series and the leader in low overhead/high thruput DEC to IBM or CDC interconnects.

For more details dial toll free - -

1-800-SRC-DATA

In Ohio, dial --

1-614-421-2094

SOFTWARE RESULTS CORPORATION

2887 Silver Drive
Columbus, Ohio 43211
TWX 810-482-1631

COMBOARD™ Software Results Corporation

DEC UNIBUS™ Digital Equipment Corporation

THE COMPLETE SOFTWARE REFERENCE SERVICE

The Software Catalog
Microcomputers • Minicomputers

Find the software and software information you need, quickly and easily — indexed 8 different ways, by: • Application • Subject • Computer System • Operating System • Programming Language • Microprocessor • Package Name • Software Vendor

The Software Catalog is published every six months (with Supplemental Updates three months later). It is your comprehensive guide to the availability, prices, applications, and compatibility of packaged software — the essential reference tool for any person or business having a computer or planning to purchase one. Order **The Software Catalog** today!

	Single Copy	Standing Order* Save 15%
THE SOFTWARE CATALOG MICROCOMPUTERS	$69.00 (2 year)	$58.50
Supplemental Update (Micro)	$15.00 (2 year)	$12.75
THE SOFTWARE CATALOG MINICOMPUTERS	$95.00 (2 year)	$80.75
Supplemental Update (Mini)	$15.00 (2 year)	$12.75

*Catalog & Supplement sent automatically upon publication



For fast credit card service, call **800-223-2115** (in NY State call 212-867-9040, ext. 307). Or send check, purchase order, VISA, MC, AMEX with exp. date and signature to address below.

ELSEVIER/ INTERNATIONAL SOFTWARE DATABASE™
Elsevier Science Publishing Co., Inc.,
Box CW, 52 Vanderbilt Ave.,
New York, New York 10017

Office Products

Sperry Corp.

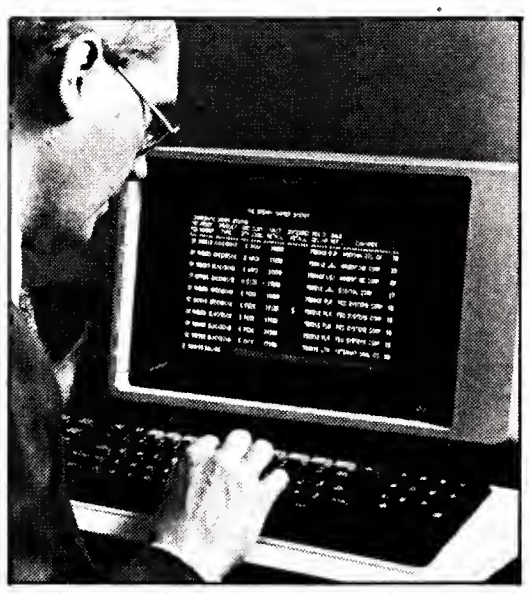
Sperry Corp. will display its Sperrylink office system and its application generator called the Mapper System at Booth S5462.

Sperrylink is an intergrated office system featuring word processing, electronic speadsheet, networking and electronic mail. The system is designed for medium-size and large organizations, the vendor said.

Sperry's Mapper System is said to allow non-data-processing professionals to manipulate, extract and analyze their information more easily, the vendor said. The system allows the manager to create programs for budget planning, sales analysis, inventory control, production scheduling and other applications.

The basic price for a 64-user Sperrylink system is between $505,000 and $670,000. Mapper's price is approximately $978/mo.

More information is available from Sperry through P.O. Box 500, Blue Bell, Pa. 19424.



Sperry Corp.'s Mapper System

Codex Corp.

Codex Corp. will demonstrate two new products in its line of communicating office desktop computers at Booth S5050.

CDX-268 Models 25 and 45 are designed for multiuser applications in distributed office networks. Based on an operating system similar to Bell Laboratories' Unix, the multiuser software includes record management and word processing capabilities, Cobol and Basic languages and communications facilities.

The desktop computers reportedly offer more disk storage space than comparable systems, including the IBM Personal Computer and Apple Computer, Inc.'s Lisa microcomputer.

The Model 25 comes with two 650K-byte diskette drives. The Model 45 has one diskette and 15M-byte Winchester drive. Prices range from $4,500 to $9,000, depending on the configuration.

Further information can be obtained from the vendor at 20 Cabot Blvd., Mansfield, Mass. 02048.

Harris Corp.

Harris Corp. will display its 9000 series office systems product line at Booth S5062.

The Harris 9000 is a family of office systems ranging from stand-alone to clustered configurations that provide integrated word processing, personal computing and communications capabilities. Data processing is provided via network connections with other Harris products, a vendor spokesman said.

Prices for the Harris 9000 range from $9,500, for a stand-alone system with printer, to $84,000, for a cluster system consisting of eight workstations and four printers. More information is available from Harris Corp., Information Systems Sector, Melbourne, Fla. 32919.



Harris Corp.'s 9000 Series

Four Phase Systems, Inc.

Four Phase Systems, Inc., at Booth S5392, will be showing its Series 5000 line of computers designed for office automation and distributed processing applications.

The 5000 series features broadband local-area networking, support for up to 128 of the firm's Fastrak intelligent workstations, up to 6M bytes of main memory, up to 2.2G bytes of disk storage and up to 16 loadable character sets. The processors can accommodate communications of up to 50K bit/sec and employ a high-speed direct memory access architecture, the vendor said.

A base System 700 with 25 display terminals, 1.5M bytes of main memory, 138M bytes of disk storage and communications controller costs $218,605, the vendor said from 10700 N. De Anza Blvd., Cupertino, Calif. 95014.

Computer Consoles, Inc.

Computer Consoles, Inc. will demonstrate a number of new features and major enhancements for its Officepower integrated office system at Booth N4900. Demonstrations of Officepower and Power 5/20 will take place.

The latest version of Officepower, Release 2, is said to be a multifunctional Bell Laboratories' Unix-based office automation system.

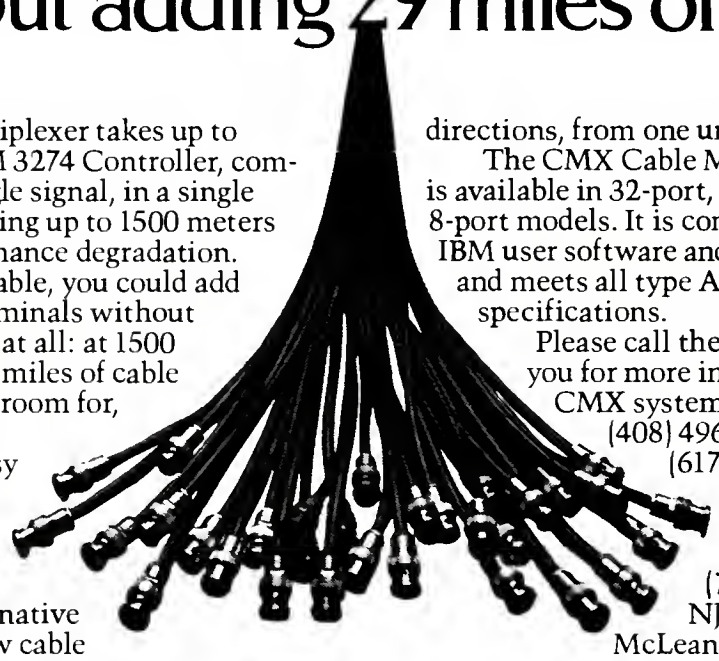
New features reportedly include a comprehensive applications package designed to create and handle user-defined forms, automatic spelling verification and intersystem mail capabilities.

Other new provisions in Release 2 are special calendar graphics, list processing, automatic paragraph and section numbering and electronic spreadsheet. The following Officepower features were upgraded for Release 2: permissions, support for IBM 6670, records operations, reminders, telephone messaging, word processing and printing.

Computer Consoles will also exhibit other products from its Officepower lines including Intersystem Mail, CCI 4920 and 4921 letter-quality printers, Supercomp-Twenty business planning software package, Spelling Checker, User Defined Applications Package and Power 5/20, a family of systems.

Prices for Officepower products begin at $30,000; prices for Power 5/20 begin at $19,600; and prices for Power 5/55 begin at $162,600, a spokeswoman said. Computer Consoles is located at 97 Humboldt St., Rochester, N.Y. 14609.

Now you can add 31 IBM 3270 devices without adding 29 miles of cable.



Our CMX Cable Multiplexer takes up to 32 inputs from an IBM 3274 Controller, combines them into a single signal, in a single cable, for demultiplexing up to 1500 meters away. With no performance degradation. So using an existing cable, you could add as many as 31 new terminals without pulling any new cable at all: at 1500 meters each, that's 29 miles of cable you don't need to find room for, install or manage.

Installation is easy using existing RG-62 A/U coaxial cable and BNC connectors. It's especially easy when you consider the alternative —pulling miles of new cable through already-crowded ducts.

Up to four cables can be run from the CMX, so you can support 3278, 3279 and 3287 devices on different floors, or in different directions, from one unit.

The CMX Cable Multiplexer system is available in 32-port, 24-port, 16-port and 8-port models. It is completely transparent to IBM user software and terminal operation and meets all type A interface and cabling specifications.

Please call the regional office nearest you for more information about the CMX system: Santa Clara, CA, (408) 496-6464; Burlington, MA, (617) 273-5858; St. Louis, MO, (314) 434-1024; Dallas, TX, (214) 385-7090; Los Angeles, CA, (714) 553-1771; Edison, NJ, (201) 225-5225; McLean, VA, (703) 448-1117.

Ungermann-Bass
The Net/One® Company

Other Things to See

Plastic Reel Corp.

Plastic Reel Corp. of America (PRC) will introduce six containers for software shipping and storage as the latest additions to its Data Vault line, which will be exhibited in its entirety at Booth S5017.

Three of these Data Vault containers were designed specifically for disk packs and cartridges:

- DV3-40-25, which reportedly accommodates one 12-platter pack or two IBM 5440 disk cartridges or two IBM 2315 disk cartridges.
- DV3-67-25, which was designed to hold either one five-platter disk pack or one Digital Equipment Corp. RK06/RK07 disk cartridge.
- DV6-67-25, which holds two five-platter disk packs or two RK06 disk cartridges or two RK07 disk cartridges.

A new generation of three Data Vault multiple-unit shipping cases to accommodate reels in tape seals, canisters or PRC's Easy Load II tape seals will also be featured:

- DV8-06-01, which holds 12 600-ft reels in tape seals or eight reels in canisters or Easy Load II tape seals.
- DV8-12-01, said to hold 12 1,200-ft reels in tape seals or eight reels in canisters or Easy Load II tape seals.
- DV-8-24-01, which accommodates 12 2,400-ft reels in tape seals or eight reels in canisters or Easy Load II tape seals.

Suggested retail for all shipping cases and containers is $196, with the exception of DV3-67-25, which has a suggested list price of $78, a spokeswoman said.

PRC of America is located at 475 Blvd., Elmwood Park, N.J. 07407.

Wright Line, Inc.

Wright Line, Inc., a unit of Barry Wright Corp., will display its line of filing devices, cabinets and work surfaces for managing information media in automated offices at Booth N4816.

Featured will be Wright Line's ETS 2000 workstations, which the vendor said are designed to reduce the health hazards associated with operating video display terminals. This product group comprises adjustable and fixed-height workstations and accessories. The workstations offer light-tan textured tops intended to minimize glare and reflection and rounded corners to protect operators from injury.

Other ergonomic safety features include wiring ports and channels for cable management and adjustable leveling feet to compensate for uneven floors. Pricing for the ETS 2000 workstations starts at $556, the vendor said.

Doc-Mate filing devices and Docu-Dex indexing labels also will be displayed, along with Wright Line's Optimedia Cabinets. Docu-Mate is a center-hook filing method, consisting of binders, cartridges and folders. It starts at $3.

Docu-Dex is an indexing system for use with Docu-Mate devices. A starter kit is available for $39. Optimedia Cabinets are available at a variety of prices.

The vendor is located at 160 Gold Star Blvd., Worcester, Mass. 01606.

Zax Corp.

Zax Corp. will feature its entire line of microprocessor development tools in Booths D1304 and D1305. The firm also will show its new ICD-178/8086-88 emulator and the Box microprocessor.

The Zax Model ICD-178 in-circuit emulator for the 8086 and 8088 also emulates the 8087 coprocessor for each chip. The emulator is priced at $7,995.

The Z80-based Box microprocessor can be switched from an 8-bit to a 16-bit microprocessor and features two 8-in. double-density, double-sided floppy disks and RS-232 ports.

The microprocessor is priced at $3,495. Zax is located at 8311 Westminster Ave., Westminster, Calif. 92683.

Schlegel Corp.

In Booths P7859 and P7861, Schlegel Corp. will exhibit a variety of systems and components, including electromagnetic interference shielding and a CRT antiglare screen. The firm will also exhibit its urethane cleaning blades, passive static dissipaters and keyboard membranes.

The shielding is priced at 48 cents per linear foot; the antiglare screens are $4 to $10 each; the passive static dissipaters start at $1.18 each; conductive rubber extrusion is 28 cents per linear foot; and urethane cleaning blades start at $3.50 each.

Cleaning brushes start at $3.75 each; keyboard membranes start at $1.79 each; tungsten rods start at 15 cents each; tungsten wire is 8 cents per meter; and filtration components are $2 each. Pricing varies according to design, quantity and specification, a spokesman said.

The company is located at 360 E. Avenue, Box 23113, Rochester, N.Y. 14692.

Liebert Corp.

Liebert Corp. will introduce its uninterruptible power supply systems and a new generation of environmental control systems at Booth N3668.

The firm also will exhibit its full product line, which includes Mini Center, Precision Power Center, Power Management Center and other products designed to support small to large computer systems.

Liebert's programmed power centers, called Datatec, reportedly extend the existing Liebert power protection systems line and aid users who require total power protection calling for backup capabilities in the event of power outages. Prices range from $20,000 to $80,000 installed, the vendor said.

The Liebert Environmental Control System's microprocessor driven control functions permit a programmable environment for any data center. The system also provides monitoring capabilities for complete information on the total data center — both environmental and control system parameters.

Datatec prices range from $5,000 to $25,000 installed, the vendor said through P.O. Box 29186, 1050 Dearborn Drive, Columbus, Ohio 43229.

Optical Coating Laboratory, Inc.

Optical Coating Laboratory, Inc. (OCLI), at Booth D2415, will be showing its antiglare panel, designed to fit most leading CRT terminals.

Utilizing OCLI's newly developed photophobic high-efficiency antireflection (HEA) thin-film coating, Glare/Guard is said to reduce CRT glare by 94%, reportedly minimizing the reflected brightness most sensitive to the eyes. Image-to-background contrast on the CRT is enhanced and a high resolution is maintained, resulting in crisp, sharp images, the vendor said.

Available through authorized dealers nationwide, Glare/Guard lists for $99, which includes the HEA-coated glass panel and high-impact plastic frame, a 1-oz pump spray bottle of cleaner and a lint-free cleaning cloth. OCLI is located at 2789 Northpoint Pkwy., Santa Rosa, Calif. 95401.

Synsor Corp.

Synsor Corp. will exhibit its study carrel for use with computer terminals, peripherals, interactive video and audio visual components in Booth D1701-2.

The carrels feature swing-out end panels for group interaction. They are priced from $900 to $1,200 from Synsor Corp., located at 14241 N.E. 200th, Woodinville, Wash. 98072.

Datacode Systems

The Graphic Laminating Division of Datacode Systems will be displaying in Booth P7144 its Data-Entry ID badge 7144 that can be magnetically encoded, embossed, bar-coded and optically keypunch-coded to be read by data-input equipment made by all manufacturers.

The ID badge has a single-layer, high-density magnetic stripe deeply etched to minimize reading errors caused by weak signals. Code information is automatically transferred into the stripe with 4,000 orsteds of energy. The code cannot be erased or altered by a common magnet, but the inner surface of the laminate can be impregnated with a security seal; and photographs can be recessed in the layers of laminates to prevent tampering.

The company will supply the equipment for photography, on-site finishing and laminating and badges to meet any user requirement. Price depends on the number of colors chosen as well as several other variables, the vendor said from 1701 E. 12th St., Cleveland, Ohio 44114.

International Data Corp.

International Data Corp. (IDC) will be displaying its line of services and products at Booths S5043-S5047.

IDC services cover a range of types, including data files; continuous information services, which include research reports, memoranda, newsletters, seminars and conferences; guide series; consulting; multiclient research; and various publications. The average service price ranges from $9,000 to $20,000.

IDC can be reached through Box 955, 5 Speen St., Framingham, Mass. 01701.

How to recognize what's truly significant in a computing information glut.

Do you sometimes feel that you're on the losing end of the computer revolution? That you're being snowed under by an avalanche of information? That just plowing through all of this information is taking a tremendous bite out of your time? And once you've dug out from under it all, how do you know what's worthwhile?

Communications of the ACM will tell you. Whether you are a computing novice or an expert of many years standing, you'll find that *Communications of the ACM* is the information source you should read first.

For twenty-five years, we've given creative and innovative computing specialists a forum to discuss the latest software and hardware, the newest and most successful techniques and practices, and the most exciting new research. We've kept our readers at the forefront of computing technology with the most up-to-date information on computing applications, systems and programming, computing methodologies and human factors.

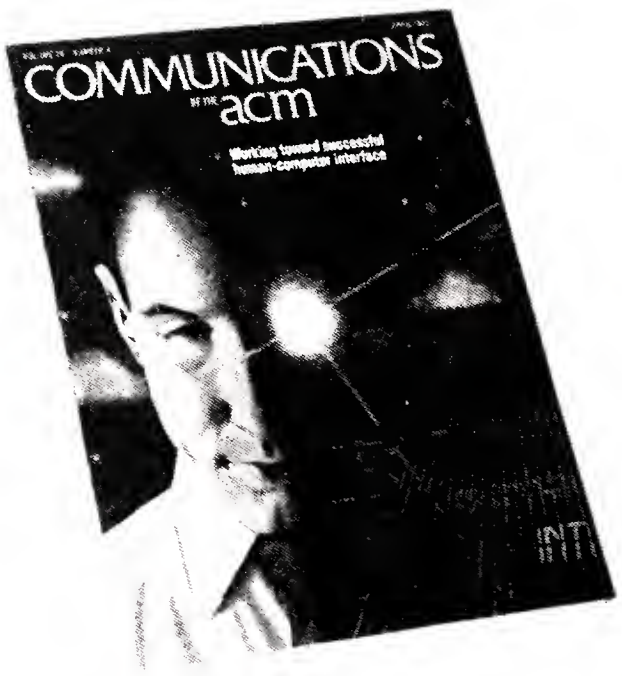
These are just some of our unique features:
- Reports and Articles
- Computing Practices
- Research Contributions
- Technical Correspondence
- ACM Forum
- Self-Assessment Procedures
- Abstracts from other ACM publications
- Special Issues dedicated to one subject in-depth

And now we're adding even more:
- From Washington
- Case Studies
- Technology Transfer articles
- General Interest articles

Exciting graphics, both on the cover and on the inside, give us a dynamic new look to match our dynamic new directions.

With all the information available today, how do you recognize what's truly significant in a computing information glut?

Read *Communications of the ACM.*



While you are at NCC, please stop by the ACM booths (S 5033 and S 5035) to pick up an issue of *Communications* as well as membership information.

Communications of the ACM is published monthly by the Association for Computing Machinery. It is available to non-members for $65.00 a year. Members of the ACM receive it as a member service. See the ACM membership application in this issue.

☐ Enclosed is my check or money order for $65.00 for a non-member subscription to *Communications of the ACM.*

☐ Please send me ACM membership information.

Please type or print clearly.

Name_____

Street Address_____

City_____ State_____ Zip_____

Signature_____

ACM Subscription Department
P.O. Box 12105, Church Street Station, New York, New York 10249

(N)

Data Devices International

Data Devices International will be showing its line of media maintenance products at Booths 4500-4504.

On display will be The Analyzer, a microprocessor-controlled magnetic-tape management system, which costs $16,570, according to the vendor.

The Mark 500 magnetic-tape cleaner operates at 50 in./sec and can clean a 2,400-ft reel of tape in 1.92 minutes. The unit costs $8,995, the vendor said.

The firm will also introduce The Minicertifier, a computer tape analyzer which can identify and correct most tape defects, according to the vendor.

The unit costs $29,995 the vendor said, from 20235 Bahama St. Chatsworth, Calif. 91311.

Dennison Kybe

Dennison Kybe Corp. will be showing its line of magnetic media products and services at Booths N4100-N4102.

Included in the display will be the firm's MLT-502. The magnetic tape cleans retensions, removes static change and evaluates the condition of 800, 1,600 and 6,250 bit/in. tapes in 4.25 minutes, according to the vendor.

The MLT-502 costs $12,395, the vendor said from 82 Calvary St., Waltham, Mass. 02254.

Ring King

In Booths P7144-P7148, Ring King Visibles, Inc. will exhibit its diskette flip file, which reportedly holds 20 diskettes, a locking diskette storage tray with a hinged lid, two handles and interior dividers, a desktop diskette storage tray and portable diskette carriers.

The flip file is priced at $42.95, the locking tray costs $24.95, the desktop tray is $35.95 and the portable carriers list at $3.25 for 5¼-in. diskettes and $4.95 for 8-in. diskettes, the vendor said.

The company is located at 215 Second St., Muscatine, Iowa 52761.

Input-EZ Corp.

Input-EZ Corp. of Denver will exhibit a patented terminal stand, designed to increase operator comfort and productivity at Booths P7406-P7408.

Incorporated in the product's design is the patented Input-EZ ergonomic concept which places the keyboard, a document platform and CRT screen in a straight line at the proper postural and optical relationship in distance and height to the operator, the vendor explained.

The Model M30 terminal stand is priced at $442, according to the vendor.

Input-EZ is located at 7330 S. Alton Way, Unit E., P.O. Box 3444, Englewood, Colo. 80155.

Marvel Metal Products

Marvel Metal Products Co. will display a multimedia file and a desktop computer carrel in Booth D2132.

The file, featuring top access, will store hanging letter and legal-file folders, printouts and magnetic media in any combination, the vendor said.

The two top panels slide open from the center to provide work surfaces on either side of the filing area. The unit costs $289.

The all-steel Desktop Computer Carrel is said to free up the work surface by providing overhead shelf storage.

The carrel is available to fit 48-in.- or 60-in.-wide work surfaces. With two book shelves, the unit costs $200 and with three shelves, $220.

The vendor is located at 3843 W. 43rd St., Chicago, Ill. 60632.

ACL, Inc.

ACL, Inc. in Booth P7712 will be displaying its line of disposable towelettes that are used to clean equipment and work-station surfaces and eliminate static buildup.

The towelettes are treated with the company's Staticide, a topical antistat intended to eliminate static charges. The towelettes cost less than $5 for a box of 24, from 1960 E. Devon Ave., Elk Grove Village, Ill. 60007.

Randomex Data Maintenance

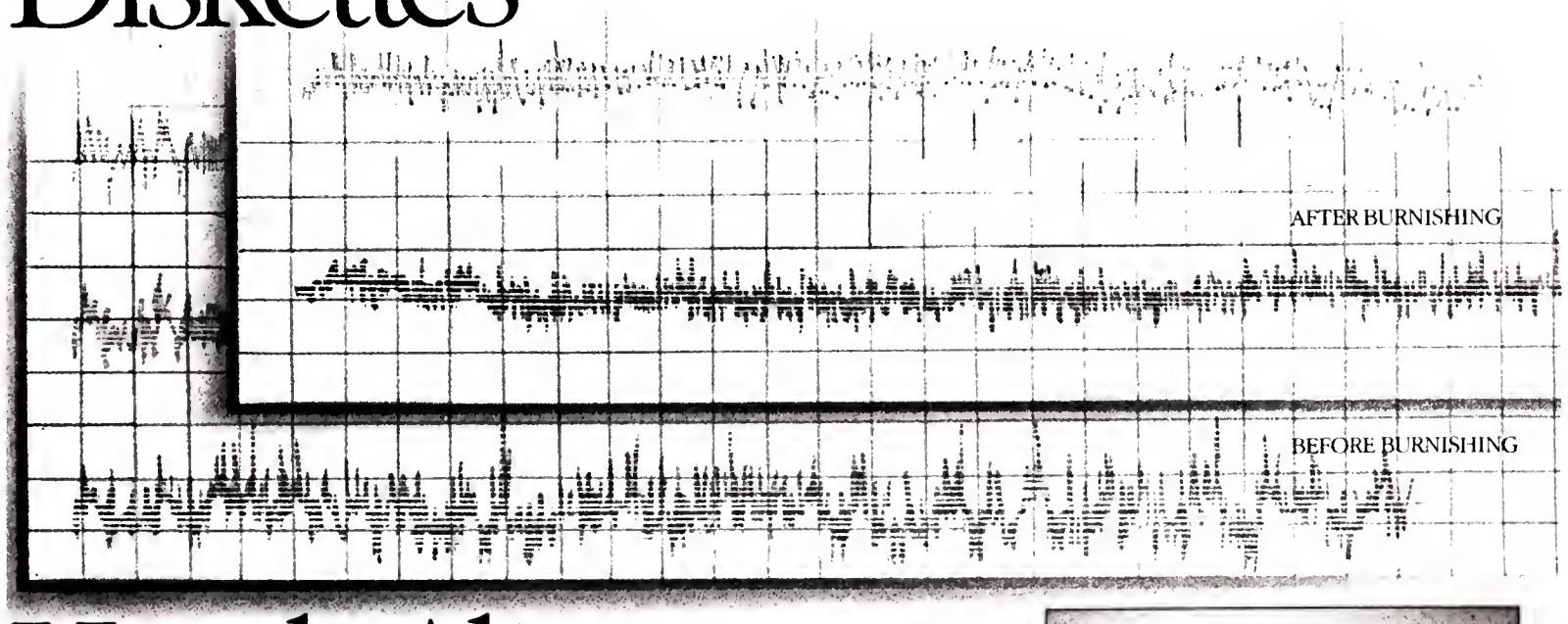
In Booth N4000, Randomex Data Maintenance, Inc. will exhibit its line of automatic inspection and cleaning equipment for removable hard disk packs and cartridges.

Displayed for the first time will be the company's 850 automatic disk cartridge cleaner, which reportedly has the capability of cleaning disk cartridges dating from the original IBM 1130 system to the most recent of cartridges.

The cartridge cleaner is priced at $3,950 from the firm at 1100 E. Willow St., Signal Hill, Calif. 90806.

DISCOVER THE DYSAN DIFFERENCE

Advanced Burnishing Makes Dysan Diskettes



Heads Above The Rest

That's Why They're Quite a Bit Better

Dysan has taken conventional burnishing methods a bit further and developed a most advanced technique to assure optimum performance of your system.

Dysan's burnishing method and proprietary DY[10] ™ lubricant makes the media surface so smooth that heads actually glide across the surface with optimum head-to-surface interface. That means precise recording, total system reliability, and protection of your floppy investment.

The true cost of a diskette is not just the purchase price, but the purchase price *plus* the time you spend to fully load the disc. That's a big investment and that's why Dysan goes a bit further to make diskettes which are the finest that money can buy.

Background:

Before burnishing, the surface of the media contains many microscopic peaks and valleys. Without proper burnishing, these tiny high points can interfere with read/write head interface which cause signal problems, surface abrasion, and debris accumulation. And that means poor system performance.

Other Benefits:

Dysan's "hands-off" auto-load certification system allows Dysan to test each and every diskette and eliminates any possibility of handling errors. Also, 100% surface testing both on *and* between the tracks guarantees that every diskette is error-free. Plus, Dysan's proprietary DY[10] lubricant provides maximum head-to-surface compliance and prolongs diskette life. You can select from a complete line of premium 8" and 5¼" diskettes, single or double density, certified on one or both sides.

DY[10] is a trademark of Dysan Corporation.

Two

Second in a Series

Burnishing



Dysan CORPORATION
Corporate Headquarters:
5201 Patrick Henry Drive
Santa Clara, CA 95050
(800) 551-9000

Wolfe Computer Personnel Testing, Inc.

In Booth W6608, Wolfe Computer Personnel Testing, Inc. will introduce its Dial-A-Skill knowledge series of 30-min tests for evaluating qualifed, experienced data processing professionals.

Test modules include structured Cobol, OS JCL (MVS), DOS/VSE JCL, TSO/Structured Programming Family and Structural Analysis and Design Concepts. The fee is $55 per skill measured, which includes grading and a detailed report.

Wolfe can be reached through Box 319, Oradell, N.J. 07649.

Amco Engineering Co.

At Booths W6588 and P6590, Amco Engineering Co. will feature its line of shielded electromagnetic interference cabinets and consoles.

The products are designed to assist manufacturers in conforming to recently enacted Federal Communications Commission regulations on emission control, according to the vendor.

Typical price for a medium-size cabinet is approximately $900, Amco said from 3801 N. Rose St., Schiller Park, Ill. 60176

Identatronics

Identatronics will be showing its All-In-One photo identification system at Booth D2015.

The system is said to provide instant, indestructible photo ID badges that are computer-compatible for data collection, time and attendance and door access control. Badges are custom-designed to customer specifications and are available in many varieties, according to a spokesman for the vendor.

The All-In-One system ranges in price from $1,000 to $1,500, the vendor said from 425 Lively Blvd., Elk Grove Village, Ill. 60007.

Pace, Inc.

Pace, Inc. will be exhibiting two soldering/desoldering systems and a benchtop repair system for printed-circuit boards at Booth W6598.

Its Model SX-301 is said to be a self-contained, spike-free, power-soldering/desoldering system that removes components from any assembly, according to a spokesman for the vendor. It costs $610.

The Pace Micro portable operates on ac and 12 Vdc sources and reportedly provides spike-free MOS operation. It costs $395.

The PRC-151 benchtop repair system was designed for any rework, repair and modification of printed-circuit boards. It costs $1,175.

The vendor is headquartered at 9893 Brewers Court, Laurel, Md. 20707.

Curtis 1000

Curtis 1000 will exhibit a variety of its office products at Booth S5019.

Those products include two personalized mailing alternatives — Chain-O-Letter (matched letterheads) and Envo-Matic (envelopes) or Clean-Cut, a set of continuous forms said to have the appearance of individual sheets, the vendor said.

They include a line of stock and custom data processing labels and lines of magnetic media. Other computer-related supplies range from data binders to expanding and protective mailers and single-strike and multistrike film and a variety of ribbons.

Prices are dependent on quantity ordered, according to the spokesman. The vendor is headquartered at 1000 Curtis Drive S.E., Smyrna, Ga. 30080.

Jensen Tools, Inc.

In Booth N4908, Jensen Tools, Inc. will feature its tool kit for computer service technicians.

The JTK-78L tool kit reportedly contains the tools necessary to perform troubleshooting and on-site repairs at computer installations. It costs $217, includes standard logic test equipment and comes in a padded zipper case. The vendor is located at 7815 S. 46th St., Phoenix, Ariz. 85040

International Memory Products Of California, Inc.

International Memory Products of California, Inc. (IMP) will be demonstrating its new service — disk pack and cartridge refurbishing — at Booth P8108.

A distributor of disk packs, diskettes, magnetic tape and furniture, IMP said it will also rebuild crashed or damaged disk packs and cartridges to meet or exceed industry standards.

The refurbishing process is said to include a step-by-step quality assurance program and a seven-year guarantee against defects in material and workmanship. Prices range from $50 to $495, the vendor said.

The vendor is located at 3017 Ocean Park Blvd., Santa Monica, Calif. 90405.

North Star solutions are simple and powerful.

Not everyone needs a small business computer as powerful and fully-featured as a North Star. The North Star ADVANTAGE and HORIZON® microcomputer systems are built for those who demand a great deal more...of themselves as well as the vital tools they select for office automation.

Powerful

Putting a North Star system through its paces is like high-speed driving in a luxury sports car: instant response to user commands, with a feeling of untapped resources within. Your North Star system has the power to get you through the fast curves of business and over towering peaks in workload. North Star outperforms the industry in single-user, multi-user and now in office network systems.

Simple

Advanced software engineering has harnessed the power of the HORIZON and ADVANTAGE, so that achieving your results is as simple as a Sunday drive. Concise user commands instruct the computer to work the way you want it to.

And, we keep it simple everywhere: service, system expansion, and even custom software.

Solutions

North Star systems are designed to get you from A to B as effectively as possible. The designed-in harmony of our word processing, planning, accounting and other applications permits faster solutions and a broader range of possible accomplishments.

And no solution is complete until it is in presentation form. North Star graphics concisely present your results in charts, graphs and graphic figures.

Discover North Star's simply powerful solutions at one of over 1000 computer stores or systems houses. Call 800-447-4700 for the location nearest you, or write North Star Computers, Inc., 14440 Catalina Street, San Leandro, CA 94577.

NorthStar™
Simply powerful solutions.



The North Star logo, togline and HORIZON ore either trademarks or registered trodemorks of North Star Computers, Inc. © 1983.
Systems serviced nationwide by MAI/Sorbus Service Division.

See us at NCC, Booth #W6358.

POSITION ANNOUNCEMENTS

PROGRAMMER ANALYSTS

The New Connecticut National Bank, one of New England's strongest regional financial institutions, is seeking experienced Programmers with Financial Application exposure for our IBM MVS Data processing Centers in Hartford and Bridgeport. Application developers at The New Connecticut National Bank will have an IBM 3033 dedicated to their development activities.

Responsibilities include development of sophisticated banking applications. We are seeking candidates with 2 or more years corporate experience in COBOL using TSO/SPF. Opportunities include positions requiring experience in either:

- Check processing systems
  or
- On Line Real Time Systems

We offer you an outstanding career opportunity, a competitive salary and a company paid benefits package, including medical-/dental insurance, a stock and savings plan, educational assistance and life insurance.

If you feel your background meets our requirements, please send your resume and salary history plus current requirements immediately to:

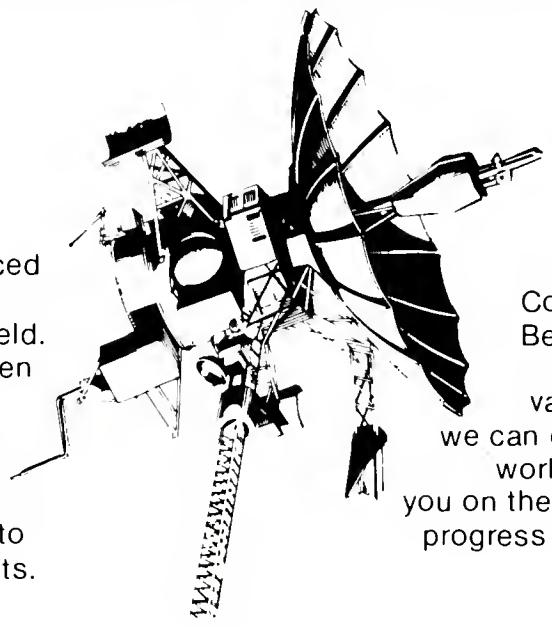
Ella M. Harding
Senior Employment Representative
Human Resources
Connecticut National Bank
777 Main Street
Hartford, CT 06115

Connecticut National Bank is an Equal Opportunity/Affirmative Action Employer M/F

Connecticut National Bank

COMPUTER SCIENCES CORPORATION

Concentrating on Communication Systems Engineering . . .

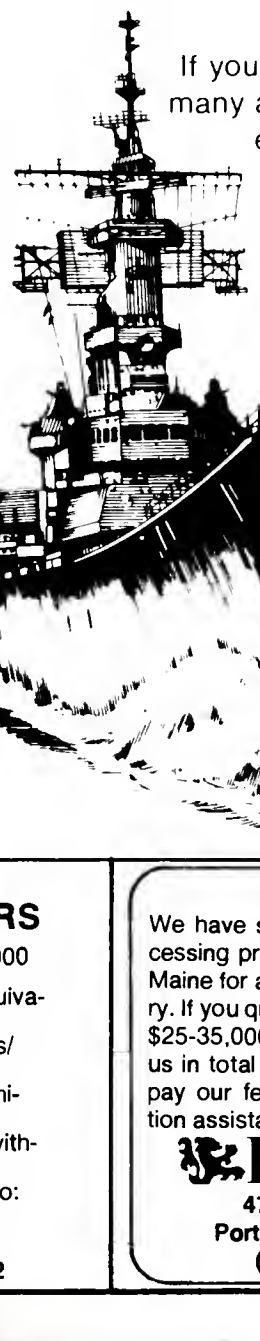


You are an experienced professional in the information sciences field. Your desire is to broaden your experience and enhance your career growth. You know the significance of finding just the right company to satisfy your requirements.

We're the Systems Division of Computer Sciences Corporation. Because of our high quality staff and the potential to work in a variety of communication fields, we can offer an especially stimulating work environment; one that places you on the leading edge of technological progress and that offers a continuing challenge and unique growth opportunities.

Our present work includes satellite communications, signal processing, secure voice conferencing, strategic network engineering and computer control systems. All areas where we are experiencing strong growth. Because of this growth, we have immediate openings in the areas of:

COMMUNICATIONS SYSTEMS ARCHITECTURE, DATA/VOICE AND GRAPHICS NETWORK ENGINEERING, MODELING AND SIMULATION, COMSEC APPLICATIONS, COMMUNICATION PROTOCOL DESIGN, MULTIPLE ACCESS TECHNIQUES, PROPAGATION ANALYSIS, MISSION AND FUNCTION ANALYSIS, MODULATION SUBSYSTEM DESIGN, ELF TO EHF RADIO SYSTEMS OR C^2 MISSION DEFINITION.



If you are interested in a company that offers multiple career paths and many avenues for upward mobility; a company whose people are always encouraged to learn new skills and seek out the project and work location that best suits their interest and career goals, find out more about your future with Computer Sciences Corporation, a communications systems company.

Computer Sciences Corporation
Systems Division (MC 218 CW-5)
6565 Arlington Boulevard
Falls Church, VA 22046

CSC

Equal Opportunity Employer
U.S. CITIZENSHIP REQUIRED

COMPUTER SCIENCES CORPORATION

EDP INCORPORATED affiliates nationwide

Our Clients need good

Analysts Programmers Tech Specialists

Let us help you connect with outstanding career opportunities in the *SOUTHEAST*

Our clients have many challenging positions available.

Send your resume today, before your position is filled. All fees paid by our client companies.

EDP INCORPORATED
Suite 305, Fairview Plaza One
Charlotte, NC 28210
704/554-1101

Arizona/California/Texas/Colorado/Florida

SCIENTIFIC OR BUSINESS PROGRAMMERS

All fees and relocation paid. $20-40,000

If you have a BSEE, BSCS, BS in Mathematics or Physics or equivalent, we need you right now.
For Business: OS/DOS/IMS/CICS/MVS/JES Prog/Anal/Systems/Data Base. All large scale installations.
For Scientific: experience in the computer, communications, semiconductor, or aerospace/defense industries.
Your name, resume, and present employer will not be given out without your permission.
For sincere personal service, please send a confidential resume to:

Dan Pullman (602) 274-5660
PULLMAN PERSONNEL
3033 North Central Ave. Suite 401, Phoenix, Arizona 85012

MAINE

We have specialized in data processing professional placement in Maine for almost a fifth of a century. If you qualify for positions in the $25-35,000 range, please contact us in total confidence. Our clients pay our fees and provide relocation assistance.

ROMAC®
477 Congress St.
Portland, Maine 04101
(207) 773-4749

SYSTEMS ANALYST

The Department of Computing Services of the Fayetteville campus of the University of Arkansas, located in the scenic Ozark Mountains of Northwest Arkansas, has an opening for a Systems Analyst.
The position requires a strong COBOL background using IBM software in a multi-processing, on-line environment, and the ability to interface with all levels of the user community. Knowledge of Student Records Systems and Data Base a plus. Send resume and salary history to:

Director of Computing Services
222 Administrative Services Bldg.
155 Razorback Road
University of Arkansas
Fayetteville, AR 72701
University of Arkansas is an Equal Opportunity/Affirmative Action Institution

Focus On Your Future With Tektronix

Engineering Computing Systems, a recently formed business unit, is responsible for the design, development, manufacture and marketing of a complete line of engineering work stations.

We are currently seeking several key individuals to join our organization. Listed below are a brief description and requirements for these key positions. In addition to the initial responsibilities listed, these positions provide high visibility and career paths to greater responsibility in both the technical field and management.

Manager— High Performance Application Development

Responsible to plan, organize and direct a high performance CAD workstation application group. This will include the development of overall strategies, programs for evaluating and acquiring application software and direct application software product implementation projects of considerable scope and complexity.

This position requires strong management skills, knowledge of CAD application and high performance application software and knowledge of systems, applications, networks and data base systems.

Software Application Engineers

Will identify engineering applications requirements, develop software application acquisition strategy, identify and qualify software vendors, and extend, modify, port and benchmark applications to run on Tek's line of engineering computing systems.

This position requires experience developing software products in both a lead and individual contributor role, familiarity with requirements analysis and third party software marketplace, knowledge of UNIX™, CPM, PASCAL, C and FORTRAN and experience proposing and developing product concepts.

Senior Software/Hardware Engineer

Provide technical leadership for an integrated set of engineering software products. This responsibility will include setting the technical direction in the areas of user interface, applications integration, the selection/determination of products and functionality for products focused at CAD/EE workstations as well as directing a group of engineers in the implementation of this direction.

This position requires prior experience in the design of user interfaces, a lead role in the design and development of a major software application product, experience with UNIX™ and the ability to focus product requirements across products and markets.

We offer a team environment where the individual is important with a company recognized for technical leadership in the fastest growing segment of the computer marketplace and in a location recognized as one of the United States' most desirable from a quality of life perspective.

If you would like to explore these start-up opportunities, forward your resume to:

Technical Staffing Manager
Engineering Computing Systems
Tektronix, Inc.
P.O. Box 1000, MS 61-195
Wilsonville, Oregon 97070

We are an equal opportunity employer m/f/h.

TM of Bell Laboratories

Tektronix
COMMITTED TO EXCELLENCE

COMPUTER PROFESSIONALS

For more than three quarters of a century, EBASCO SERVICES INCORPORATED has attained a remarkable record of achievement in the design, engineering and construction of power generating facilities. Our success has been based on the technical skills of our employees and their willingness to meet the energy challenges of the 80's.

Recent project additions have resulted in an augmentation of our staff in New York for the following personnel:

COMPUTER APPLICATIONS ENGINEER

CAD System Support

Qualified individuals should have 3-5 years experience in FORTRAN and/or Assembly languages plus familiarity with PDP 11/70 and/or VAX 11/780 hardware. Also required CAD or Computer Graphics experience, knowledge of integraph "turnkey" system preferred. The ability to interface with users at all levels of a large organization and heavy analytical skills are essential. BS in Engineering (electrical preferred), Computer Science or Mathematics required.

SR. SYSTEMS PROGRAMMER/ANALYST

Minimum 2 years' experience in systems programming on Burroughs large systems with datacom networks. User support experience and knowledge of NDL, MCP and DCALGOL required. Bachelor's degree in Mathematics, Computer Science, Engineering or equivalent required.

EBASCO offers excellent salaries, and a comprehensive benefits package which includes pension plan, three investment/stock purchase plans, a full range of medical/life/disability insurance plans, a credit union and tuition reimbursement.

For immediate attention please forward resume including salary history and requirements to: D.M. Montana, Professional Employment, Dept. 501, EBASCO SERVICES INCORPORATED, Two World Trade Center, New York, N.Y. 10048. An Equal Opportunity Employer M/F/H.

Meeting The Challenge Of Change

EBASCO

Manager of Software Development & Programming

As a nationally respected provider of consulting services for the electric power industry, Southern Engineering can offer challenge and professional involvement to a talented Software Manager. Your work will involve supervising a professional staff in developing engineering and financial packages to meet the needs of our clients and project managers. Customer contact and some travel will be involved.

You should have a degree and at least 5 years of experience in software development using FORTRAN, COBOL and PL-1. Well developed leadership and communication skills are a must and experience with IBM Mainframe and electric utilities will be given preferred consideration.

Competitive salary and benefits. For immediate consideration, call **(404) 352-9200** or send your resume to: **Personnel Director, Southern Engineering Company of Georgia, 1800 Peachtree St., N.W., Atlanta, GA 30367-8301.**

Southern Engineering

We are An Equal Opportunity Employer M/F

MUMPS/MIIS PROGRAMMERS/ANALYSTS

Join a dynamic, growing company. Compucare, a leader in health care information systems, is seeking MUMPS/MIIS Programmer/Analysts WITH MINIMUM 2 YEARS EXPERIENCE. Health care systems background desired. Positions are at various locations. We offer highly competitive compensation and benefits packages to the right candidates. Please send resume and salary history to Director of Personnel:

COMPUCARE, INC
8200 Greensboro Drive
McLean, VA 22102

NEW HAMPSHIRE MASS/CONN

$25 - $60K

Applications and Systems Software

Micro/Mini/Mainframe

MAS Management Advisory Services Inc

Colonial Office Park
48 Constitution Drive
Bedford, NH 03102
(603) 472-8844

Fees and relocation expenses company paid.

ROBERT HALF

EDP OPPORTUNITIES COAST TO COAST

Robert Half, staffed by EDP professionals for EDP professionals with 80 offices throughout the U.S., Canada & Great Britain, is the largest network of personnel consultants in the Data Processing field. And its establishment in 1948 also makes Robert Half the oldest. One call and you can search the local, national and international markets. All fees are paid by client companies, of course. The following is a partial listing of opportunities and locations:

BOSTON

IDMS DBA

Leading BOSTON comm'l bank seeks topnotch data base analyst for hi-vis role. IBM OS/MVS, CICS, IDMS shop w/extensive comm network. Req tech proficient pro w/db design & implem skills. Stepping-stone to mgmt. **$43,000**

SYS CONSULTANT

State-of-the-art IBM OS/MVS, IMS DB/DC fin'l svcs co seeks results-oriented indiv for productivity projs. Will act as internal consultant to coord w/ vendors, eval soft pkgs. + interface w/top mgmt. Long term growth. **$36,000**

DOS/VSE SYS PROG

Leading mfr seeks tech prof Internals spec for major upgrades. IBM DOS/VSE, VM/CMS, CICS w/small, dynamic staff. Challenging oppty w/ind ldr in rural setting. **$33,000**

ROBERT HALF
of Boston, Inc.
100 Summer Street
Boston, MA 02110
(617) 423-1200

PROVIDENCE

DATA PROCESSING MANAGER

RH EXCLUSIVE—SE MASS co seeks exp'd data processor to join exec mgmt team. Req decisive, shirtsleeve-type w/ability to design, program & install computer apps in RPG & COBOL in an on-line environ. Excellent benefits & salary potential. Outstanding career oppty for seasoned sr prog, proj ldr or asst DP mgr to move up. **$32,000**

ROBERT HALF
of Providence, Inc.
76 Westminster St., Ste. 400
Providence, RI 02903
(401) 274-8700

TENNESSEE

SR PROGRAMMER ANALYST

Management potential! Growing company needs 3-4 years COBOL with CICS and DL/1 background. Manufacturing experience required. **$28-30,000**

PROGRAMMER/ANALYST

Several openings. Must have 2-4 years COBOL experience with on-line and data base experience. Large Burroughs or hospital background preferred. Mid **20's**

ROBERT HALF
of Tennessee, Inc.
1101 Kermit Dr., Suite 407
Nashville, TN 37217
(615) 361-4900

HARTFORD

PROJ LEADER

CT oppty to direct new CICS devel proj. Pref fin'l sys, lge IBM bkgrd, degree. Must have mgmt potential. **$35,000**

SYS PROGRAMMERS

IBM MVS SMP, SPF tech bkgrd needed for area clients w/ excellent growth thru the 80's! Full reloc. **$48,000**

DATA BASE

IMS/DG tech bkgrd qualifies for new corp data ctr expansion. Will direct future on-line DB plans. **$40,000+**

TECH SPECIALIST

For the software spec seeking more bus sys exposure. Will be internal tech consultant for div planning grp. **$38,000**

LIFE SYSTEMS

Prog to proj mgr oppty's for exp'd life, grp or pension indiv's. Prog bkgrd pref. **$40,000**

SR PROG/ANALYSTS

CT oppty's for degreed indiv's w/min 2 yrs exp COBOL w/ IMS or CICS qualifies for multiple openings in mfg, ins consulting, fin'l industries. **$30,000**

ROBERT HALF
of Hartford, Inc.
111 Pearl Street
Hartford, CT 06103
(203) 278-7170

NEW ORLEANS

DB ANALYST

Must be exp'd in lg scale MVS envir w/CICS in tech support. CICS + MVS dump analysis. ALC, PL/1, COBOL a plus. To **$35,000**

SAUDI ARABIA

3+ yrs COBOL IMS DB exp. CICS DL/1 4341 OS/VS1. Acctg & Payr appl. 1 yr in Fla, 2 yr contract Saudi w/50% inc in sal. Salary **OPEN**

ROBERT HALF
of Louisiana, Inc.
P.O. Box 57629
New Orleans, LA 70157
(504) 835-4296

WASHINGTON

MANUFACTURING

MD hi tech co seeks solid sr programmer analyst. Must know IBM, COBOL and RPG. DP Mgr oppty within 6 mos! To **$30,000**

ROBERT HALF
of Washington
7316 Wisconsin Ave.
Suite 401
Washington, DC 20814
(301) 652-1960

ST. LOUIS

SERIES/1 PROGRAMMER/ANALYSTS

Rapidly expanding organization seeks several experienced Series/1 Programmer/Analysts for new development of a major system. Company has 3 weeks vacation first year plus unbelievable fringe benefits. Fee Paid. Salary to **$31,000**

SR MVS & CICS SYSTEMS PROGRAMMERS

Major manufacturer seeks 2 heavyweight Systems Programmers. One to lead MVS, the other for CICS. Company is expanding from 1 to 3 IBM 4341's this year. Fantastic ground floor opportunity. Fee Paid. Salary to **$40,000**

SR COBOL PROGRAMMER/ANALYST

Large division of Fortune 200 seeks a senior level P/A with large IBM experience and exposure to the IBM S/34. Large IBM experience required includes MVS, COBOL, TSO/SPF, and CICS or DL/1. 5 years in DP. Fee Paid. **$26-32,000**

SYSTEMS ANALYST

Large manufacturer seeks several experienced systems analysts familiar with structured techniques and more than one application development methodology. Position requires a BS degree and 3 years as an analyst in large mfg company. Great learning environment. Superb fringe benefits. Fee Paid. Salary to **$34,500**

Randy Pace
ROBERT HALF
of St. Louis
7733 Forsyth
St. Louis, MO 63105
(314) 727-1535

MILWAUKEE

COBOL PROGRAMMER

Opportunity to be involved in a state-of-the-art multibillion dollar expanding DP center. Growth potential for the person experienced with OS/MVS or VS1 and IMS. Degree preferred. Mid **$30's**

PROGRAMMER ANALYST

Step into a visible position. Be #2 person in department. Get recognition for professional work accomplished. Going from S/3-15D to 4331. Seeks DOS and CICS experience. **$23-28,000**

Dick Bird
ROBERT HALF
of Wisconsin
777 E. Wisconsin Avenue
Milwaukee, WI 53202
(414) 271-HALF (271-4253)

MINNEAPOLIS ST. PAUL

PROJECT LEADER S/38

Showcase S/38 shop with prominent, Midwest firm has growth opening for RPGIII analyst/ programmer ready for step up! 3 yrs DP req'd. Job #3479. Salary to low **$30's**

Mark David
Bill Thompson
ROBERT HALF
of Minnesota, Inc.
2236 IDS Center
Minneapolis, MN 55402
(612) 339-9001

SAN FRANCISCO

Current needs are: Network Support Administrator, Operations Manager (DEC VAX), P/As (HP-Wang), Systems Programmer (IBM), Communications Programmer, Systems Supervisor (Microdata Reality), Technical Analyst-Financial Software, Systems Analysts (Univac, IBM), Systems Programmers (Univac), DP Manager (HP), Financial Systems Manager (HP), Analyst / Programmer (RPGIII), Loan Analyst (Honeywell).

Patricia Brown
ROBERT HALF
of Northern California
111 Pine Street, 15th Floor
San Francisco, CA 94111
(415) 434-1900

KANSAS CITY

MANAGER

Midwestern manufacturer seeks first full time data processing manager. Be responsible for selecting software and hardware for multi-plant manufacturer. Work directly for President to build MIS Staff. Salary to **$40,000** plus bonus

SYSTEMS PROGRAMMER

MVS Software Programmer to install new 4341. Must be capable of doing MVS GEN, CICS Support, and evaluating and installing a corporate data base. Salary to **$38,000**

George Waterman
ROBERT HALF
of Kansas City
127 W. 10th St.
Kansas City, MO 64105
(816) 474-4583

SOUTHERN CALIFORNIA

Major financial institution is expanding its staff of Programmers – Analysts – Communications and Supervisors. IBM main frame shop. Represents a real opportunity for growth.

ROBERT HALF
of Los Angeles
3600 Wilshire, #2000
Los Angeles, CA 90010
(213) 386-6805

AUSTIN

PROGRAMMER/ANALYST

Large multi-nat'l company looking for person w/1+ years experience on Tandem machine. **$20,000**

DP MANAGER

System 34 shop seeking DP manager. Requires excellent communication skills & proven management ability. RPGII programming experience a plus. **$26,500**

PROJECT MANAGER

Software development company seeking person w/2+ years management exp. Must also be experienced in IMS DB/DC and CICS. Will be responsible for managing conversion from CICS to IMS DB/DC. **$38,500**

SR TECHNICAL CONSULTANT

Software development co seeking person w/5+ years IMS DB/DC experience. CICS experience a plus. Excellent communication skills also a plus as person will be responsible for some presentations & customer documentation. **$38,500**

ROBERT HALF
of Austin, Inc.
400 E. Anderson, #334
Austin, TX 78752
(512) 835-0883

SAN ANTONIO

SR SYSTEMS ANALYST

Degree preferred. Must have knowledge and experience with COBOL, IBM, OS On-line appls, and either Order Entry, Billing or Warehousing. Position is with large central Texas city, exceptional benefits and growth potential. **$32-35,000**

SYSTEM ANALYST

Degree required. Environment is IBM 30XX, OS, IMS, with Financial appls exp required. The key to this position is REAL ESTATE appls exp. Job will lead to Sr level and Proj Ldr within 2 years. Extraordinary benefits and relocation package. **$31-35,000**

PROGRAMMER ANALYST

Degree preferred, not required. 4+ yrs exp in COBOL, On-line appls. Burroughs, HP or IBM exposure accepted. Must be self-motivated and able to work with light supervision. Financial and Bus appls are primary duties. Company is solid and growing.

All positions above and many more are in Texas where "Long Necks," "Armadillos" and the "Cotton Eyed Joe" call home.

Bob Baldauf
ROBERT HALF
of San Antonio, Inc.
6243 I H 10 West, Suite 850
San Antonio, TX 78201
1-800-531-5402
In TX dial (512) 736-2467

ALBUQUERQUE

ATM PROGRAMMER

Expanding bank group, IBM 4300 COBOL and Assembler. Requires communications/ATM Network programming exp. Start **$35,000**

Dick Starnes
ROBERT HALF
of New Mexico
P.O. Box 3320
Albuquerque, NM 87190
(505) 884-4557

NEW YORK

SYSTEMS ANALYST FINANCIAL/ACCOUNTING

Top of the line investment banking/financial service company is expanding its systems development group, and is seeking at least 4 systems analysts. College degree required, in addition to exceptional writing skills in functional & programming specifications. Knowledge of COBOL a plus. Successful candidate will have 2+ yrs exper as analyst, serving acctg & fin'l groups. High profile position, leading to management. Top corp environment. BONUS PLAN. Fee Paid. **$38,000**

EDP AUDITOR UPSTATE NY 20-40% TRAVEL

If you desire a new challenge, then this situation could be ideal. Our client, a NYSE-listed, Fortune 500 manufacturing & distribution concern, has immediate need for EDP auditor. All candidates must have 2+ yrs public and/or pvt audit exper, coupled with computer systems analysis exposure. Perform data center reviews and computer assisted audits. Relocation assistance available. Superior growth potential and benefits. Fee Paid. **$35,000**

ROBERT HALF
of New York, Inc.
522 Fifth Avenue
New York, NY 10036
(212) 221-6500

DALLAS FORT WORTH

SR SYSTEMS PROGRAMMER

Dallas co seeks person w/ min 3 yrs expr with DEC PDP-11 RSX-11M operating systems. Desire ASSEMBLER, PASCAL and FORTRAN programming skills. Full relocation paid. To **$33,000**

PROGRAMMER/ANALYST

Area co seeks person with min 2 yrs COBOL programming expr on large IBM, IMS system. DL/1 desired. Full relocation paid. To **$30,000**

Randy Habern
ROBERT HALF
of Dallas, Inc.
Two Northpark East #750
Dallas, TX 75231
(214) 363-3300

FREE:

Ask for our latest Salary Survey.

1=2

Beehive offers unique proof.

Some companies choose Beehive International's unique TOPPER® terminal for network applications. Others specify it as a superior stand-alone. Either choice leaves both options open.

Some people prefer to work in a technologically-responsive small-company atmosphere, like Beehive's. Yet those who seek stability (14 years) and profitability ($40 million in sales) choose Beehive, too.

Then there's our location. We're in one of America's most sophisticated small cities, yet within easy reach of almost every form of outdoor recreation you can think of.

Beehive International in Salt Lake City proves that a paradox can be an opportunity. Send us your resume with salary history, detailing your achievements in your chosen field. The results may prove satisfying in more ways than one.

Current Beehive opportunities exist for:

Manager Software Development

Manages software development group responsible for production of computer system software and applications. May coordinate software development with external organizations.

The successful candidate will have a minimum of three years experience in software management, including operating systems and communications. Knowledge of UNIX operating systems preferred.

Senior Programmer

For this position we require a minimum of three to five years experience and a BSCS degree or equivalent. Combined experience in UNIX or C, Ethernet, SNA, X.25, M68000 assembler language, firmware, hardware, diagnostic programming languages and DBMS is highly desirable.

Microprocessor Programmers

These senior level positions involve firmware and software development for all facets of this rapidly growing industry. These positions require experience with 68000 microprocessors, as well as a strong background in communications or terminals, 3-5 years experience with design code software for CRT based products. C-language and UNIX is desirable. Additional experience with firmware operating systems and terminal evaluation packages is strongly recommended. Positions require a BSEE or equivalent experience.

Beehive International
Personnel Department
P.O. Box 25668
Salt Lake City, Utah 84125

BEEHIVE INTERNATIONAL®

Equal Opportunity Employer M/F/H/V

International Marketing Manager

Hardware Products

Our client is the acknowledged leader In consumer and coin-operated video games and a dynamic force in Home Computer Systems. They seek top, highly promotable consumer marketing professionals to join their International Sales Marketing Group, based in the San Francisco area. International experience (including living or working abroad), and solid knowledge of at least one foreign language are key qualifications for these positions:

New Products

In this position, you will define, develop, implement and market new products and new product strategies for 1-5 years in the future. You will help develop a long-term strategic view of the Home Computer Systems market that will guide the company's future marketing planning for international markets. This is an important, high visibility position that will involve you in corporate decision making at the highest level. Necessary experience: 5-8 years in consumer electronics product management. MBA required; BSEE highly desirable.

Existing Products

In this position, you will create ongoing marketing programs to support the sale of existing hardware products including home computers, peripherals and accessories. Your responsibilities will include managing a staff of product managers; managing the product line inventory and sales; determining and maximizing profitability of the line; and making forecasts of future sales. You will be making day-to-day and long-term plans for pricing, promotion, merchandising, distribution, etc. You will work with every aspect of the marketing function, including software marketing, legal, financial and other departments. You'll need 5-8 years product management experience in consumer goods, preferably consumer electronics. You should hold an MBA, a BA in Liberal Arts and have an excellent track record in promoting consumer products.

Both positions are in the $50-60K range, with excellent benefits including relocation to the San Francisco area.

Please submit your resume with salary history or call John Fitzgerald at Sliva, Burke and Associates, a subsidiary of The Adalcar Group, Ltd., Buckminster Place Extension, 561 Union Avenue, Framingham, MA 01701. 617-875-5253.

The Adalcar Group, Ltd.
INTERNATIONAL HUMAN RESOURCES MANAGEMENT CONSULTANTS

Our client is an equal opportunity employer

The Adalcar Group provides a full range of human resources management products and services in addition to retained search and placement activities.

Data Processing

Systems Analysts/ Programmers

(Commercial Banking Systems)

Key openings in NCR's expanding EFT and Data Services Division

NCR, a world leader in the information processing industry, seeks strong achievers who can complement our team of marketing and support professionals.

Your credentials must include at least 2-5 years experience in commercial banking systems applications. Familiarity with CIF is desirable. Ideally, exposure to Assembly language and NEAT/3 programming are assets. Minimum travel required.

As one of the most respected companies in the field, NCR offers competitive salaries, a comprehensive benefit program and an atmosphere where the challenge, reward and recognition are as great as any opportunity in the business world today.

You should have a technical or business degree with computer science courses. In lieu of a degree, we will consider equivalent experience. If you are successful in your present position and want to expand your potential, forward your resume and salary history to:

Mr Randy Neises, NCR Corporation
Dept. 055, USDPG, USG-1
Dayton, Ohio 45479.

NCR
Complete Computer Systems
An equal opportunity employer

DP COURSES

We are a respected leader in the computer training field, with public and in-house training programs in both the U.S. and abroad. We seek individuals with courses already developed (or under development) in a number of areas:

- Real Time Analysis
- Microcomputer Training
- Office Automation
- Database Design
- Programming Languages
- Project Management

Significant royalty/income opportunities would develop for those individuals having courses with the potential for broad levels of popularity. We will consider outright purchase of courses in certain subject areas.
To have your course submitted for consideration, please send a detailed course outline, course length, and a resume of your professional background (in confidence).

Reply To: Box CW-B4142 COMPUTERWORLD Box 880
Framingham, MA 01701

SYSTEMS MANAGER

A healthcare corporation located in the sunbelt is seeking qualified applicants for the position of Advance Applications Manager. The successful candidate will have a minimum of a Bachelor's degree in data processing, a strong background in systems analysis, systems management and an applied knowledge and experience in advanced systems development. Must be able to develop new systems and applications in a multi-user facility. Excellent salary and benefits package. Send resume in confidence to:

CW-B4147
Computerworld
Box 880
Framingham, MA 01701

Equal Opportunity Employer

Engineering

The CSC Software & Systems Career Alert

COMPARE OUR GROWTH, OUR STANDARDS AND OUR OFFER

Examine the facts. Computer Sciences Corporation is the world's largest information services company. We're growing at a rate of 25% annually. Our Defense Systems Division is setting the standards and creating the prototypes for the industry at large. To add to our growth and standards, CSC has an exceptional offer for Software/Systems Engineers who want to work on a variety of sophisticated and technically challenging projects in a real-time environment. Excellent compensation. Rapid advancement potential — part of a formal career development program. The best of working environments, and where appropriate, an exceptional "total cover" relocation package.

Engineering professionals who would like to advance their careers should consider the following outstanding opportunities. For immediate and confidential consideration, please call or send your resume to the individual in the location listed below that matches your interest and experience.

MOORESTOWN, NJ

Call Marlene Levick COLLECT at (609) 234-1100, or forward your resume to her attention at: CSC, Defense Systems Division, P.O. Box N, Moorestown, NJ 08057.

Participate in the development of the world's most advanced shipboard decision-making combat systems, sophisticated simulation/wargaming systems, or state-of-the-art microprocessor technology.

- **REAL-TIME SOFTWARE**
- **SCIENTIFIC APPLICATIONS**
- **FORTRAN, PL/1, ASSEMBLY, "C", CMS-2**
- **OPERATING SYSTEMS**
- **MODELING & SIMULATION**
- **MICROPROCESSOR APPLICATIONS**
- **SEL, CP-901, CDC-CYBER**

HUNTSVILLE, AL

Call Betty Campbell COLLECT at (205) 837-7200, or forward your resume to her attention at: CSC, Defense Systems Division, 200 Sparkman Drive NW, Huntsville, AL 35805.

You'll be involved in the design, development, implementation and test to support a high-speed passenger system for the Department of Transportation; or provide the system engineering support in tactical missile systems to include tracking technology, guidance systems, development tests, and instrumentation systems.

- **CONTROL SYSTEMS ENGINEERING**
- **EW SYSTEMS**
- **SIMULATION & MODELING**
- **DIGITAL HYBRID & HW-IN-THE-LOOP SIMULATION**
- **TAL, FORTRAN, ASSEMBLY**

DAHLGREN, VA

Call Dan Hickman COLLECT at (703) 663-9251, or forward your resume to his attention at: CSC, Defense Systems Division, 38 Danube Drive, King George, VA 22485.

Working in conjunction with our Moorestown, NJ facility, opportunities are available for computer professionals with experience in any of the following:

- **REAL-TIME SOFTWARE**
- **CMS-2**
- **OPERATING SYSTEMS**

RED BANK, NJ

Call Rosemarie Celley COLLECT at (201) 747-6886, or forward your resume to her attention at: CSC, Defense Systems Division, 10 Highway 35, Red Bank, NJ 07701.

Participate in the design and development of advanced C^3 systems.

- **ADA, PASCAL, PL/1, ALGOL**
- **TACTICAL C^3 SYSTEMS ENGINEERING**
- **MILITARY COMM NETWORKS**
- **SOFTWARE DESIGN & DEVELOPMENT**

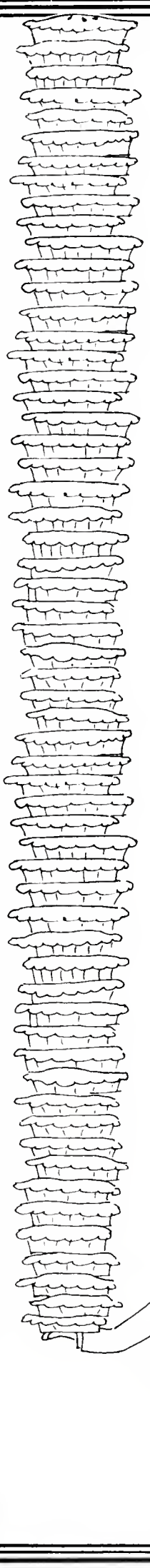
All candidates should have a BS degree in Computer Science, Electrical Engineering or a related discipline, and experience in any of the above areas. U.S. Citizenship is required.

Engineering Professionals . . . Contact Arlene Sidney, Personnel Consultant immediately if you will be attending the National Computer Conference the week of May 16th to schedule a personal and local interview—call COLLECT Monday to Friday 9:00AM to 5:00PM (609) 234-1100, Ext. 2358, or call evenings and weekends (609) 778-0794.

If you are unable to call, mail resume or write: A. Sidney, Personnel Consultant, CSC, Defense Systems Division, P.O. Box N, Moorestown, NJ 08057.

CSC
COMPUTER SCIENCES CORPORATION

We are an equal opportunity employer. m f h v



Why settle for "pie-in-the-sky", when you get a piece of your own at ON-LINE SOFTWARE.

At On-Line Software, you share directly in the success of your work, because you get a "piece of the pie" as part of our very attractive compensation plan. As one of the fastest growing software firms in the industry, OSI has a number of challenging opportunities for very talented product development and support professionals.

In order to qualify, you must have at least 5 years of intensive DP experience, with at least 3 years of CICS, IMS, Systems Programming, or Technical Writing expertise.

Current openings exist in five categories:

CICS Software Development

For InterTest, Guardian, and Omnicom:
- CICS internal and external development expertise
- Very heavy IBM Assembler

DL/I Product Development

For DataVantage, our new DL/I product:
- Extremely heavy Assembler expertise
- DL/I and either IMS/DC or CICS experience

Technical & Marketing Support

- Highly articulate with technical sales presentation experience
- Sound knowledge of CICS structure and use
- Willing to travel, with 1 or 2 overnight trips per week (no long term trips)

Microcomputer Development

For Omnilink and our new line of IBM/PC to mainframe software
- IBM/PC expertise, with heavy "C" language/UNIX
- Solid technical experience with a corporate background

Technical Writer

- Proven ability to write software user manuals
- Programming or analysis background

If you think you're up to the challenge, and want a slice of the rewards at OSI, please send a letter and resume to our Manager of Software Development, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, New Jersey 07024. Or, if you don't have a current resume prepared, call our Manager of Software Development directly at (800) 526-0272 or (201) 592-0009.



All openings are for our Fort Lee office located just over the George Washington Bridge. We are an Equal Opportunity Employer, and all replies will be held in the strictest confidence. No agencies, please.

ON-LINE SOFTWARE INTERNATIONAL

COMMUNICATIONS MANAGER

Seeq Technology, Silicon Valley's most progressive semiconductor company, is offering a challenging career in data and voice communication.

This hands on highly visible position requires a communications professional to develop and implement short and long range communication strategies to support the Company's extremely rapid growth.

Opportunities include:
- Local area networking/distributed processing
- Integration of voice and data switching
- Communication support of CAD/CAM
- Integration of national and international sales offices
- Distributor network
- New technologies evaluation/vendor interfaces

We require:
- 8-10 years of solid experience in data and voice communication
- Minimum of five years of extensive management experience
- Familiarity with all major networking standards
- Awareness of emerging technologies
- Experience in cost justification, management proposals
- Engineering background with major strengths in data communication
- Formal training with MBA preferred

Join us. Be part of this new, driving force of creativity and development. We offer a comprehensive benefits package, including an equity position.

Forward your resume to Human Resources, Seeq Technology, Inc., 1849 Fortune Drive, San Jose, CA 95131. An equal opportunity employer f/m/h/v.

seeQ

Technology's Driving Force

ASSEMBLER & ALPHA MICRO PROGRAMMER

2 years experience. Salary $35,000-50,000. Excellent opportunities.
Send resume and references to:

P.O. Box 8529
Dearfield Beach, FL 33441

TECHNICAL SUPPORT REPRESENTATIVES

InfoMed, the leader in providing computer services to the home health care industry, offers challenging career opportunity to experienced systems analysts with excellent communications skills.

Bachelor's degree and three years data processing experience required. Salary based on experience.

Send resume and salary history in confidence to:

InfoMed
1101 State Road, Building J
Princeton, New Jersey 08540
Attention: Patricia Murl

EOE

TOP SECRET SYSTEMS SECURITY EXPERT

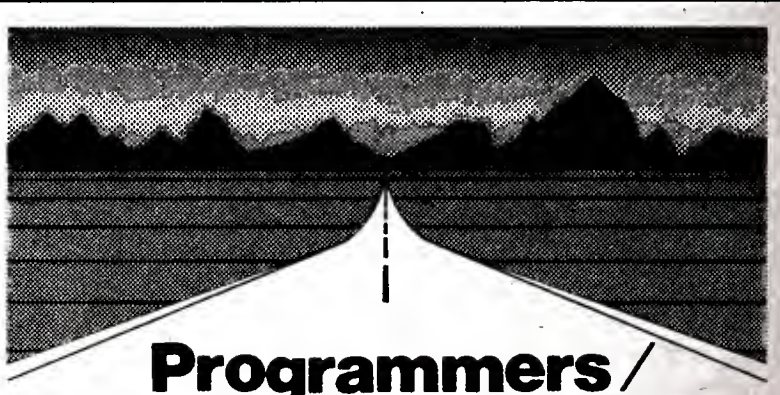
If you are looking for a new career challenge that will afford high visibility, allow you to fully utilize and enhance your creative talents while working with the newest state-of-the-art security system, look no further. This position offers a unique blend of technical and marketing support activities. Duties include presentations as well as customer interaction.

Our objective is to hire the FINEST IBM-MVS TECHNICAL TALENT as quickly as possible. Candidates will need to be more acutely prepared in their advanced specialties...and dedicated to helping others to achieve the same expertise.

At CGA, you have the opportunity to know everyone in EDP worth knowing, because our list of TOP SECRET client companies reads like the who's who of the business world.

If you have a good understanding of MVS concepts and facilities, and you fit the above qualifications, an excellent salary and benefits package awaits you along with career opportunities second to none. Please send your resume and salary requirements to:

Al DeVito
CGA COMPUTER ASSOCIATES
Cannon Hill Farm
Rte. 520
Marlboro, NJ 07746



Programmers / Programmer Analysts

Mini·Computer and/or Tandem Experience

If you are challenged by designing and implementing state-of-the-art mini- and micro-computer systems, the Hertz Corporation in Oklahoma City has outstanding career opportunities for Programmers and Programmer/Analysts with on-line application experience.

At our Worldwide Reservations Center, our Systems professionals are designing new applications in support of field operations and reservation center enhancements.

The individuals we are seeking should have the following qualifications:
- 1-5 years of data processing experience
- Communication experience
- Mini-computer implementation and/or design experience

Call Monday, May 16th from 9AM - 5PM to arrange local interview appointment being scheduled for Tuesday, May 17th or Wednesday May 18th. (714) 871-9430, 680 Langsdorf Dr., Suite 201, Fullerton, CA.

These positions offer competitive salaries and excellent benefits, including: RELOCATION PROGRAM, COMPANY PAID LIFE/MEDICAL/DENTAL INSURANCE FOR EMPLOYEE AND DEPENDENTS, SAVINGS PROGRAM, RETIREMENT PLAN AND MUCH MORE! If qualified, and unable to attend local interview, please submit your resume and salary history, in strictest confidence, to:

Hertz

The Hertz Corporation
ATTN: Ned Oistacher
10401 N. Pennsylvania
Oklahoma City, OK 73120

An Equal Opportunity Employer M/F

SENIOR PROG ANALYSTS $25 - $40K

- COBOL
- OS/MVS
- CICS
- IMS DB/DC
- DL-1
- VSAM

CALL (513)298-1923
Or Rush Your Resume Today To:
UNIVERSAL EMPLOYMENT SERVICES
3077 S. Kettering Blvd. Ste. 112
Dayton, OH 45439

GROUND FLOOR OPPORTUNITY IN INFORMATION ENGINEERING

We have innovative products, interesting new product plans, strong market penetration in a few months. We require a special kind of person: experience in application development; a background in consulting, project management, education, and marketing; broad industry experience; strong skills in planning, business management. We offer a ground floor opportunity to invest and to help build this exciting new company. Call or write Thomas Haughey, president, Management Archetypes Corp., 114 Commonwealth Ave., Concord, MA 01742. (617) 369-1022, (212) 799-8872.

MANAGEMENT ARCHETYPES corporation

On April 19, 1983, the age of hardware ended. And the age of software began as one vendor source emerged to meet the needs of information management. That source is Cullinet.

On that date, four major product announcements clearly established Cullinet as the leader in the software age.

- IDMS/R – the first commercially available DBMS combining networking and relational capabilities
- A mainframe-based information database for personal computer users
- A database-driven application software system for IBM personal computers
- A joint agreement with Apple Computer to develop software systems that enable their new Lisa to interface with IBM mainframes

Through this revolutionary set of software solutions, it has now become possible to implement workable corporate-wide computer strategies.

To realize the true potential of the software age, we seek additional talented professionals with expertise in the following areas.

April 19, 1983.
The beginning of the software age.

SYSTEMS SOFTWARE DEVELOPMENT
SOFTWARE ENGINEERS

IDMS Database Development
Opportunity to work on utilities, compilers, and Database recovery systems. Requires a minimum of 3 years' experience with DB Management Systems.

Data Dictionary Development
Apply your expertise to data dictionary systems and language compilers. Requires a minimum of 2 years' experience with data dictionary systems and/or database management systems.

Applications Development Systems (ADS)
Develop programmer productivity aids, online screen mapping services, and code generation techniques. Requires a minimum of 2 years' experience in the development of systems level software. DB background essential.

ESCAPE
Reporting to the development staff, provide customer support by telephone and in the field in the use of our ESCAPE product and assist in the development of product enhancements. Requires several years' experience in either IMS or DL/1 and Assembler language on IBM mainframes. Specific knowledge of IDMS or CICS would be a plus. Success in this role demands strong interpersonal skills and some user contact. Position involves some travel.

Software Maintenance Control Technician
To qualify for this position, you'll need a working knowledge of JCL demonstrating experience using IBM large mainframes, polished technical editorial skills, and well developed written, oral communication and organizational skills.

APPLICATIONS SOFTWARE DEVELOPMENT
SOFTWARE ENGINEERS
Challenging opportunity to develop a fully integrated set of manufacturing and financial products in an on-line database environment. Requires a minimum of 2 years' applications development experience. Database and on-line experience desirable.

Financial Systems
Participate in the development of general ledger, accounts payable, purchasing order entry, accounts receivable, all integrated in an IDMS DB/DC environment.

Manufacturing Systems
Development of bill of material, inventory control, MRP, shop floor control and master production scheduling. Fully integrated with the financial systems.

Corporate MIS
Development of a set of applications built around an integrated corporate database. The MIS Group is in the early stages of providing applications in a rapidly growing and changing environment.

MICROPROCESSOR SOFTWARE DEVELOPMENT
DESIGNERS
Successful candidates must demonstrate an understanding of high level languages such as C, PL/1 or Basic and possess significant software development experience with personal computers.

- **Graphics** – Requires a minimum of 2 years experience demonstrating familiarity with personal computer or microprocessor systems graphics.
- **Management Decision Support** – Opportunity for candidate with a minimum of 5 years' experience to assume a senior level project leader role.

For immediate, confidential consideration, submit resume with salary history to C.H. Levy, Cullinet, Dept. CW-59, 400 Blue Hill Drive, Westwood, MA 02090.

Cullinet

The solution is software . . . and software is Cullinet.

An Equal Opportunity Employer

Software Engineering Professionals

Nationwide Openings



Raytheon Service Company's Mid-Atlantic Systems Facility has career opportunities for those software engineering professionals desiring mobility, responsibility and growth. Minimum requirements include at least five years of relevant experience and educational background in engineering, math, physics or computer science; degree preferred.

SYSTEM TYPES

- Surveillance Radar
- Air Traffic Control
- Weather Radar
- Electronic Counter Measures
- AAW Fire Control/Weapons Direction
- Underwater Fire Control/Vertical Launch
- Missile Guidance/Control

LOCATIONS

- Massachusetts
- Virginia
- New Jersey
- California
- Rhode Island
- Mississippi
- Maryland

LANGUAGES

- CMS-2
- ULTRA-32
- ULTRA-16
- Ada
- PASCAL
- FORTRAN
- ASSEMBLY
- JOVIAL
- BASIC
- COBOL
- "C"

HARDWARE

- AN/UYK-7
- AN/UYK-20
- PDP-11
- RP-16
- MOD COMP
- IBM 370
- CYBER 174
- M68000
- AN/UYK-19
- DEC SYSTEM 10
- AN/UYK-43
- AN/UYK-44
- I8086
- VAX
- Z8

We offer an excellent, totally company-paid benefits package. Both permanent and per diem assignments are available.

If you feel you qualify for one of these challenging positions, please send your resume to: Ms. Gail Frazier at the address below. Principals only please.

RAYTHEON COMPANY

RAYTHEON SERVICE COMPANY

Mid-Atlantic Systems Facility
P.O. Box 851
Moorestown, New Jersey 08057
An Equal Opportunity Employer

SYSTEMS ANALYSTS

Tektronix: The Graphics Innovators



There is an upsurge of innovation at Tektronix as we provide creative solutions for a future of change. For instance, our new line of low-cost, high-quality color raster terminals will catapult us even further ahead of the competition. Our just-announced technological breakthroughs in high performance color 4115B terminals and 4691 Color Copier are the new industry standards. These excellent new products complement existing products to form the broadest offering in the industry.

We have career opportunities for SYSTEMS ANALYSTS in:

- **Dayton, Ohio**
- **Long Island, N.Y.**
- **Milford, Conn., & other geog. locations.**

With a college degree and extensive FORTRAN, preferably scientific applications orientation, your customer/user interface skills and mini or main-frame experience will be used in a pre- and post-sales and client support environment.

Send your resume with salary expectations TODAY, or call Ed Gadsden, COLLECT: (301) 948-7151. Tektronix, Inc., Dept. CW02, 700 Professional Drive, Gaithersburg, MD 20879. An equal opportunity employer M/F/H.

Tektronix®
COMMITTED TO EXCELLENCE

Software Development/Support

Let's Talk Potential

The people at ADR know a lot about potential. Twenty-three years ago ADR was just a good idea waiting to happen.

Today, ADR is the nation's oldest and largest independent systems software company.

The intervening years have brought many innovations. ADR's integrated product line was a concept that revolutionized the industry, while our 4th generation software provided the world with the most efficient, powerful systems ever developed.

Currently, we're looking for individuals who possess a thorough knowledge of **IBM Assembly language and a minimum of 3 years programming experience.** Software development and support positions are available in our Princeton and Dallas facilities.

Potential doesn't end when a small company becomes big. At ADR we're always looking for people with good ideas just waiting to happen.

If you would like more information about a technical career with ADR, write Mr. E.D. Smith, Director of Technical Recruiting, **APPLIED DATA RESEARCH, INC.,** Route 206 & Orchard Road, CN-8, Princeton, NJ 08540. An equal opportunity employer.

APPLIED DATA RESEARCH

The one vendor system software solution

Field Engineers

Disk and/or DEC Experience Preferred

System Industries manufactures controllers and distributes disk/tape systems, including 300 Mbyte SMD, 600 Mbyte Winchester drives, and 6250 BPI tape drives. We're in our highest growth mode yet, and that means challenge... for our employees and for your CAREER GROWTH.

We have immediate openings for Field Engineers in Los Angeles, the San Francisco Bay Area, Washington D.C., and Chicago. What's more, we'll be hiring continually in all major metropolitan areas as our growth expands.

Please submit your resume to Jeanne Abbott, Personnel Dept., System Industries, 1855 Barber Lane, P.O. Box 789, Milpitas, CA 95035; or call COLLECT (408) 942-1212.

We are an equal opportunity employer.

SYSTEM INDUSTRIES

EMPLOYMENT SERVICE FOR
PROGRAMMERS AND ANALYSTS

National Openings With Client Companies
and Through Affiliated Agencies

Scientific and commercial applications • Software development and systems programming • Telecommunications • Control systems • Computer engineering • Computer marketing and support

Call or send resume or rough notes of objectives, salary, location restrictions, education and experience (including computers, models, operating systems and languages) to either one of our locations. Our client companies pay all of our fees. We guide, you decide.

RSVP SERVICES, Dept. C
Suite 700, One Cherry Hill Mall
Cherry Hill, New Jersey 08002
(609) 667-4488

RSVP SERVICES, Dept. C
Suite 211, Dublin Hall
1777 Walton Rd., Blue Bell, PA 19422
(215) 629-0595

From outside New Jersey, call toll-free 800-222-0153

RSVP SERVICES
Employment Agents for Computer Professionals

FLORIDA
Director Of Systems And Programming

Challenging position as leader of a large systems and programming staff working on a diversified and intersting set of application areas supporting the service deliveries systems of Metro-Dade County. Our environment includes: shared IBM 3081, 3032, and 4341 computers under VM/SP; MVS/SP; JES2; twin PDP11/70's under RSX-11M; TP network serving over 500 remote users via ACF/NCP, ACF/VTAM, CICS/VS and RJE; IDMS and System 2000 data bases.

The minimum requirements for this position are: three years experience managing a systems and programming staff of a medium to large teleprocessing-oriented DP installation; Bachelors Degree in Public Administration, Business Administration, Computer Science, or related subject. Additional experience and formal education is desirable.

Competitive salary range; excellent suburban location and fringe benefits.

Interviews will be conducted the first week of June 1983. Interested applicants should submit a detailed resume postmarked no later than May 23rd to:

Carl Beck Trauger
Management Recruitment
Office of Computer Services
5880 SW 87th Avenue
Miami, FL 33173
(305) 598-8497

Equal Opportunity Employer M/F

SECURITY ADMINISTRATOR/ PROJECT LEADER

Will be responsible for developing and implementing a comprehensive disaster recovery plan. Position will report directly to the Manager of Computer Services. Position requires a Bachelor of Science in Computer Science or equivalent. A minimum of five years experience in DP. 2-3 years in project management and background in Data Security. Programming background preferable.

TELECOMMUNICATIONS ANALYST

Need analyst/technician for rapidly growing T.C area. Minimum two years experience in Telecommunications. Responsible for installation and maintenance of terminals and printers. Must be able to interface well with users and vendors.

SENIOR COMPUTER OPERATOR

Operate large scale MVS JES2 system. Will require minimum of three years experience on large O/S mainframe. Strong working knowledge of O/S, JCL and IBM utilities is required as well.

PRODUCTION SUPPORT ANALYST

Responsibilities will include maintenance of production JCL, production libraries, development of C-lists, macros and other productivity aids. Requires a minimum of two years experience using O/S JCL, TSO and an IBM programming language, preferably COBOL, PLI, SAS or PRO-GRAMMAR.

Contact: Christian Broadcastng Network, Inc., Personnel Dept., CBN Center, Virginia Beach, VA 23483. CBN is an EOE. M/F/H.

FLORIDA

availABILITY, inc.

All Expenses Paid

Our clients, in urgent need of your expertise will pay all your expenses in relocating you to an area of Sun & Fun, No State Tax.

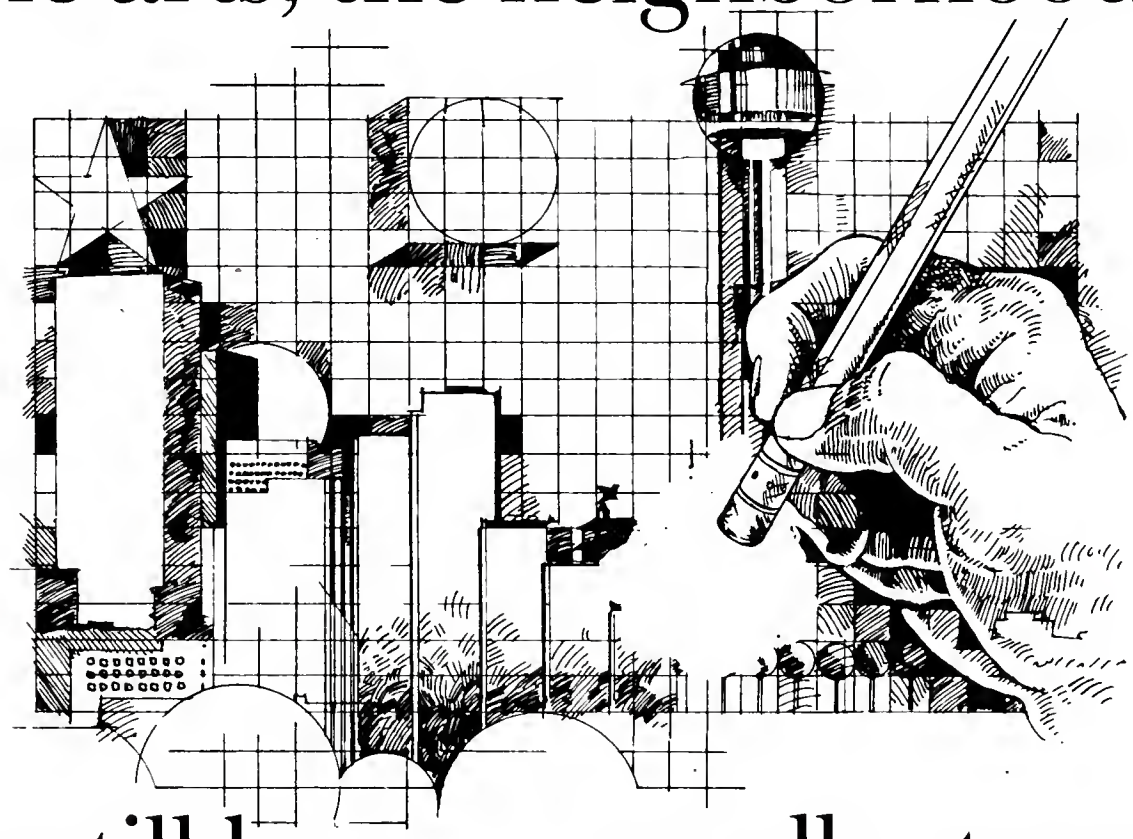
Average Temperature 75°.

PROGRAMMER ANALYSTS
SYSTEMS ANALYSTS
SYSTEMS PROGRAMMERS
DATA BASE ANALYSTS

AVAILABILITY, INC.
813 872-2631
Dept C P.O. Box 25434
Tampa Florida 33622

Software Engineers.

Take away the great climate, the professional sports, the arts, the neighborhoods.



You still have an excellent reason for living in Dallas. E-Systems.

At E-Systems you'll have opportunities that most engineers just dream about—opportunities to work on long-term projects that'll put you on the leading edge of technology in command and control, reconnaissance, and other highly advanced electronics systems.

Plus, with a career at E-Systems in Dallas, you'll have the opportunity to enjoy everything that makes Dallas one of the most enjoyable and livable areas in the United States.

There's another plus. E-Systems offers salaries and benefits that compare with the best anywhere.

If joining E-Systems in Dallas means a move, we'll help you with our personalized relocation program. The program even includes dual career assistance.

Right now, E-Systems is looking for people with these qualifications:

Software Engineers.

— PERKIN-ELMER 3230 or VAX 11/750 computer systems experience preferred. Real-time, software design, development and maintenance:
- Application software
- Communications software
- Operating systems
- Diagnostic software
- Maintenance applications

Includes both assembly and FORTRAN Language Applications. B.S. in EE, Math or Computer Science with 3 or more years experience required. Will also consider recent graduate with a high grade point average and one of the above stated degrees.

— TANDEM systems experience preferred. Real-time, software design, development and testing. Requires TAL (a PASCAL type programming language) and MACRO-11 experience and 3 or more years in the field with a B.S. in EE, or Computer Science.

Software Test Engineers.

— 2 to 4 years in software systems testing plus enough software development experience for:
- Definition of test requirements
- Generation of test plans/ procedures
- Test execution and reporting

B.S. in Computer Science or Math required.

Software Operating System Engineers.

— Emphasis on real-time distributed data acquisition/processing systems.

- PERKIN-ELMER 3230
  NETWORKS
  —UNIX —SNA
  —PDL81 —FORTRAN
- VAX 11/750 to VAX 11/730
  NETWORKS
  —DECnet —UNIX
  —PDL —FORTRAN
  —CMS

Should have a minimum of two or more years experience in VAX/VMS or PERKIN-ELMER operating system environments. Also requires a B.S. in EE, Math or Computer Science.

Systems Programmers.

— Emphasis on large-scale real-time distributed data systems:
- VAX 11/780, PDP 11, Hewlett-Packard and Data General Minicomputers interconnected via the 50 megabyte HYPER channel network system.
- Computer system interfaced to hardware devices via an ETHERNET NET-ONE system for hardware control.
- ORACLE relational DBMS.
- AYDIN color graphics terminals.

MIS Professionals.

Senior Specialist.

— Must have ability to lead technical support function in a service oriented, controlled environment. Must be experienced in:
— MVS/JES2 generations and software installations
— VTAM/NCP and data base
Prefer 8 or more years technical experience

Senior Software Engineers.

— Must have ability to control network configurations to meet service level requirements.
Requires experience in:
— VTAM/NCP, CICS and TSO in an MVS environment
— MVS/JES2 generation
Prefer 4 or more years technical experience.

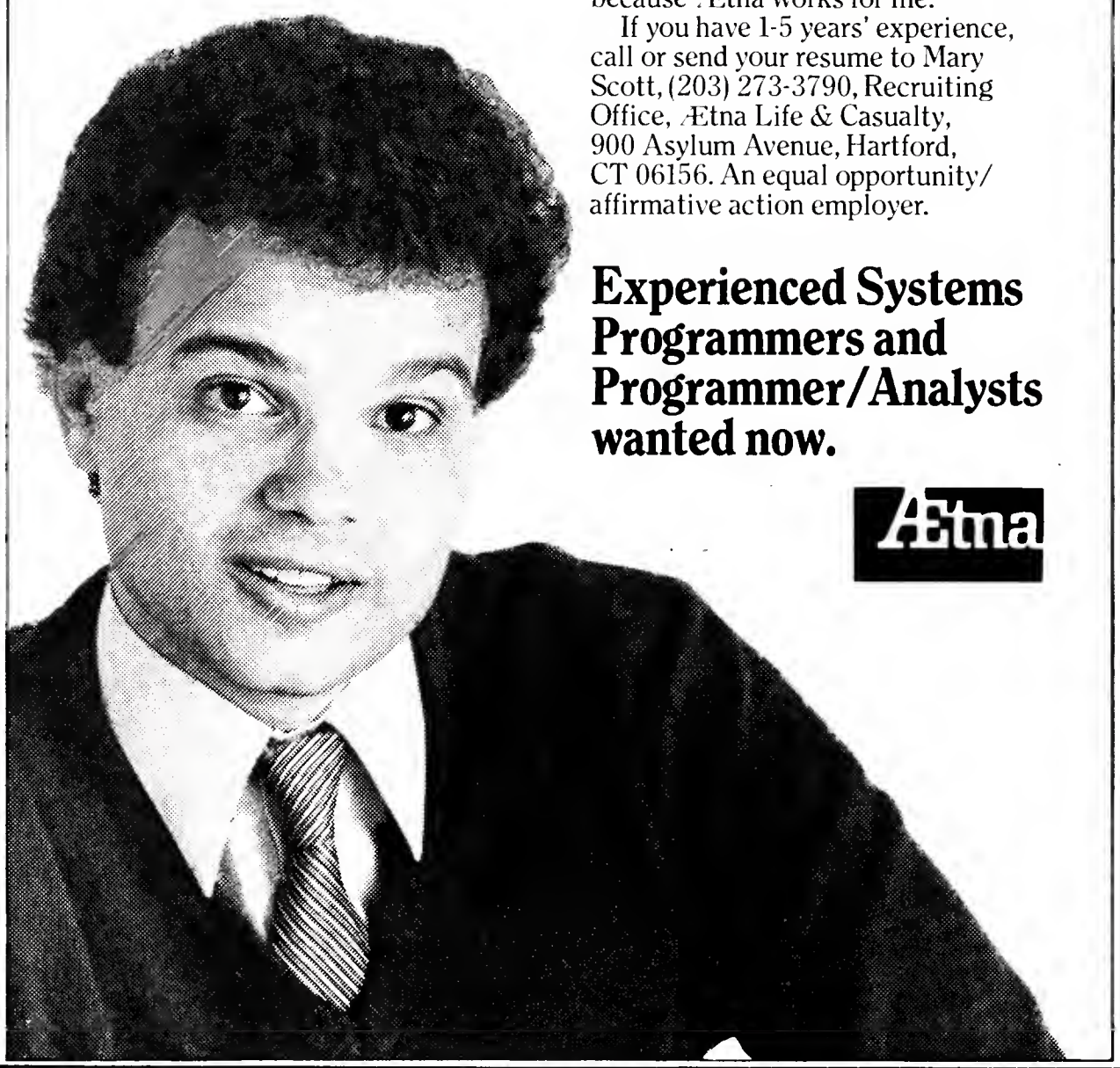
— Will control all phases of data storage administration in an MVS environment and experience in:
— Data base installation, definition, and maintenance (IDMS or ADABAS)
— Data security (RACE or ACF2)
Prefer 4 plus years technical experience.

For immediate consideration please forward your resume to: **Gary Hunt, E-Systems, Inc., Garland Division, P.O. Box 226118, Dept. 41, Dallas, Texas 75266.**

E-SYSTEMS
The problem solvers.

An equal opportunity employer, M, F, H, V.

"Ætna works for me."



"I've been a systems programmer for five years. I work hard, and I've always earned my pay. But it wasn't until I came to Ætna that I was paid what I'm worth.

"The benefits are comprehensive, too. There's Life, Medical, Dental, and Disability Insurance. The atmosphere at work encourages growth and creativity. I utilize my talents and get rewarded for doing so.

"But Ætna's commitment to data processing doesn't stop there. The software and hardware are sophisticated and state-of-the-art. And the training program teaches me more than I already know.

"Sure, *I* work for Ætna. But only because Ætna works for me."

If you have 1-5 years' experience, call or send your resume to Mary Scott, (203) 273-3790, Recruiting Office, Ætna Life & Casualty, 900 Asylum Avenue, Hartford, CT 06156. An equal opportunity/ affirmative action employer.

Experienced Systems Programmers and Programmer/Analysts wanted now.

Ætna

Systems Professionals: Talk to AMS Before You Decide!

Considering a career switch? You should know about AMERICAN MANAGEMENT SYSTEMS (AMS). We are an expanding nationwide firm with current annual sales of $70 million.

Our professional staff, now 650 strong, designs and implements major and sophisticated MIS systems for very large organizations . . . including the top 200 state and local governments, banks, oil and gas firms, colleges and universities, federal agencies . . . and many others.

Our work involves data base systems, data communications, office automation, and local area networking. AMS professionals have opportunities as:

- **Technical Consultants**
- **Systems Architects**
- **Software Analysts**
- **Data Communications Specialists**
- **Hardware Analysts**
- **Applications Designers**

We have career opportunities for highly-qualified professionals with 5+ years of experience in large MIS projects. We're looking for people with proven track records and the desire to accept challenges and develop leadership roles as Consultants, Technical Specialists or Project Managers.

These openings are in our Washington, D.C.; New York City; Denver; and Houston offices. We offer a full range of benefits and salaries of $40-60K, depending on your qualifications. Send your resume in confidence to:

Judy F. Blair
Director, Office of Professional Resources
American Management Systems, Inc.
1777 North Kent Street, Arlington, VA 22209

An Equal Opportunity Employer.

ams
AMERICAN MANAGEMENT SYSTEMS, INC.

Tek®

Applications Engineers

TEK is an industry leader in RF spectrum analyzers, logic analyzers, and microcomputer development systems as well as test and measurement, and broadcast instrumentation products. Due to our tremendous growth, we now have positions for Applications Engineers in Chicago and Philadelphia for one of our fastest-growing divisions, the COMMUNICATIONS DIVISION.

Qualified applicants should have a BSEE or Computer Science degree or equivalent knowledge. Technical experience in RF spectrum analysis and microwave disciplines is required. Strong GPIB and BASIC programming skills and experience are necessary. Excellent communication skills and the ability to interface effectively with customers is also required.

TEK offers an excellent compensation and benefits package. For immediate consideration, please send your resume to Bonnie Roelofs, Tektronix, Inc., Dept. CW59, 1551 Corporate Drive, Irving, Texas 75062.

An equal opportunity employer m/f/h/v.

Tektronix®
COMMITTED TO EXCELLENCE

SYSTEMS PROGRAMMER

Must have experience in supporting VM and/or VSI. Requires excellent OS/VS Assembler, JCL, SYSGEN, SMP skills. Will help support a multi-cpu DB/DC environment with many diverse applications. Excellent benefits. Reply in confidence to:

Jim Sproules, Director
Georgetown University
Central Computer Facility
Lower Level,
New North Bldg
Washington, DC 20057
(202) 625-4038

CALIF. & UNIX

Openings in a variety of areas and disciplines.

(714) 891-UNIX

CPU COMPUTER PROFESSIONALS UNLIMITED, agency
7441 Garden Grove Blvd.
Ste. G, Garden Grove, CA 92641

Distribution Center Automation

PROGRAMMER/ANALYST

Cincinnati Area

The Gap Stores, Inc., a NYSE listed fashion specialty retailer with over 550 stores nationwide, is currently seeking an experienced Programmer/Analyst in our MIS Department.

A major distribution center expansion and automation effort centered around HP based system development, has just begun. This project will utilize HP3000 and HP1000 computers linked to laser scanners, in-motion scales, and conveyor control systems. The successful candidate will play a key role in this development effort.

The ideal candidate should have 3 plus years COBOL programming and design experience on HP3000 series computers. IMAGE, V/3000 and/or HP1000 experience is a definite plus.

The Gap offers an excellent company benefits package, including competitive salary and relocation assistance. For immediate consideration, please call Gary Mierenfeld collect, Monday - Wednesday, 5/9-11 between 9:00am-1:00pm, (606) 283-1100, or submit your resume to The Gap, 3434 Mineola Pike, Erlanger, KY 41018. An equal opportunity employer m/f/h. Principals only, please.

the gap®

Somehow, Did Your Last Raise Seem Insignificant?



New, Free Computer Salary Survey!

Learn about compensation in the computer field, including the effects of inflation and recession, and which career paths offer the greatest compensation from a 28-page report prepared by Source Edp.

Despite past inflation and recession, demand for computer systems and the people needed to support them continues to grow.

But which professionals, with what specialized experience and skills, are really in the best positions for long term career and salary growth? And is your salary really keeping pace?

In our new Survey, you'll get answers to these questions and much more.

Compare your salary with many others.

The new Survey not only provides salary medians for 48 position categories, but it also shows "highs" and "lows" for each one as well. Figures are organized by types of professionals, including those ranging from commercial programmers to management and marketing positions; by experience level and by size of computer installation site.

So you'll be able to compare your salary with those computer professionals who have similar responsibilities and skills and to learn who in computing, in what kinds of specialized disciplines, are earning the most.

No other Survey we know of is more comprehensive. It's based on contacts with more than 50,000 professionals and 25,000 organizations.

Learn about new growth areas.

Most significantly, you'll also read about which specific areas of specialization are forecasted for unusual growth in this decade and beyond. The past year saw many changes in the economy and has altered career prospects for some professionals who were not properly prepared, so the need to stay abreast of current trends and career planning has never been so critical.

Whatever computer specialty you're in, or plan to explore—programming, software, systems design, data communications, mini/micro systems, data base, computer marketing, sales, management or others—our Survey can help you make the most of your career. You'll be able to keep up with changes in the profession, establish career goals, develop action plans, evaluate your progress, spot potential dangers, take corrective action when needed, and in general, keep your career on the best possible course for growth.

Call for your free copy.

The new *1983 Computer Salary Survey and Career Planning Guide* is available without charge. You owe it to yourself to get a copy of the report—especially if most of your career lies ahead of you.

Call today and our free 28-page Survey will be mailed to you in strict confidence, without obligation.

source edp
Personnel Services.

The world's largest recruitment firm that specializes exclusively in the computer profession.

Client companies assume our charges.

Call today.

Call the office nearest you that is listed to the right. If unable to call, write:

Source EDP, Dept. CS-9
P.O. Box 7100
Mountain View, CA 94039

(When writing, please indicate your title.)

Call today.

United States:

Arizona		
Phoenix		602/279-1010
California		
(Northern)	Mountain View	415/969-4910
	San Francisco	415/434-2410
	Walnut Creek	415/945-1910
(Southern)	Century City	213/203-8111
	Fullerton	714/871-6500
	Los Angeles	213/688-0041
	Newport Beach	714/833-1730
	San Diego	619/231-1900
	Torrance	213/540-7500
	Van Nuys	213/781-4800
Colorado		
Denver		303/773-3700
Connecticut		
Hartford		203/522-6590
Stratford		203/375-7240
District of Columbia		
Washington D.C.		202/466-5890
Florida		
Miami		305/624-3536
Georgia		
Atlanta (Downtown)		404/588-9350
Atlanta (North)		404/953-0200
Illinois		
Chicago (West Loop)		312/782-0857
Oak Brook		312/986-0422
Rolling Meadows		312/392-0244
Indiana		
Indianapolis		317/631-2900
Kansas		
Overland Park		913/888-8885
Kentucky		
Louisville		502/581-9900
Louisiana		
New Orleans		504/561-6000
Maryland		
Baltimore		301/727-4050
Greenbelt		301/441-8700
Towson		301/321-7044
Massachusetts		
Boston		617/482-7613
Burlington		617/273-5160
Wellesley		817/237-3120
Michigan		
Detroit		313/259-7607
Southfield		313/352-6520
Troy		313/362-0070
Minnesota		
Minneapolis (Downtown)		612/332-6460
Minneapolis (West)		612/544-3600
St. Paul		612/227-6100
Missouri		
Clayton		314/862-3800
Kansas City		816/474-3393
New Hampshire		
Nashua		603/880-4047
New Jersey		
Cherry Hill		609/482-2600
Edison		201/494-2800
Morristown		201/267-3222
Paramus		201/845-3900
Princeton		609/452-7277
New York		
New York City		
(Grand Central)		212/557-8611
(Penn Station)		212/736-7445
(Wall Street)		212/962-8000
Rochester		716/263-2670
Syosset, L.I.		516/364-0900
White Plains		914/683-9300
Ohio		
Akron		216/535-1150
Cincinnati		513/769-5080
Cleveland		218/771-2070
Columbus		614/224-0660
Dayton		513/461-4660
Oklahoma		
Tulsa		918/599-7700
Oregon		
Portland		503/223-6160
Pennsylvania		
King of Prussia		215/265-7250
Philadelphia		215/665-1717
Pittsburgh		412/261-6540
Texas		
Dallas (Central)		214/954-1100
Dallas (North)		214/387-1600
Fort Worth		817/338-9300
Houston (Downtown)		713/751-0100
Houston (W. Loop South)		713/439-0550
San Antonio		512/342-9898
Virginia		
McLean		703/790-5610
Washington		
Bellevue		206/454-6400
Wisconsin		
Milwaukee		414/277-0345
Canada:		
Ontario		
Toronto		
Downtown		416/865-1125
Don Mills		416/425-5730
Mississauga		416/272-3333

WE ARE A LEADER IN SEARCH OF A TECHNICAL RECRUITER.

We are a growing world leader in data processing.

We are pioneers in the development of telecommunications systems...innovators in the delivery of data base information...explorers on the leading edge of technology.

We are searching for a state-of-the-art Technical Recruiter with 2-5 years of relevant experience.

Results-oriented, aggressive, able to function under pressure/deadline situations, good math aptitude, business awareness and degreed.

A professional highly experienced in technical recruitment...fluent in systems terminology...sophisticated in the use of recruitment techniques.

We will provide a most attractive starting salary...a complete array of fringe benefits...and the greatest challenge of your professional career.

If you are qualified, we urge you to apply.

Respond in confidence with your detailed resume...salary history and requirements...and convincing cover letter to:

CW-B4146, Computerworld, Box 880
Framingham, MA 01701

An Equal Opportunity Employer M/F

MANAGER TECHNICAL SUPPORT

Midwest manufacturing company has immediate need for technical services manager. Requires strong CICS and/or MBS background and good communications skills. $40K plus bonus and good benefits.

MANAGER DATA PROCESSING

Small community, midwest location. IBM DOS/VSE, CICS environment. Needs systems development background with life insurance company. Opportunity to become officer of corporation. Mid 30's plus good benefits.

DATA BASE ADMINISTRATOR

Need strong IMS DB/DC background plus strong communications skills. State-of-the-art IBM shop. Midwest location. To $50K.

PROJECT LEADER/ MARKETING SYSTEMS

Industry leader offers highly visible position. Need sharp individual with marketing systems development background. State-of-the-art IBM shop. Mid 30's, excellent benefits, plus home purchase.

DATA BASE ADMINISTRATOR

Requires Degree, strong communications skills and good knowledge of ADABAS. State-of-the-art IBM company, excellent benefits, salary $40-45K, plus possible home purchase.

FEE PAID.
ALL INQUIRIES
STRICTLY CONFIDENTIAL

EFFECTIVE SEARCH INC.
P.O. Box 8717
Wichita, Kansas 67208

programmer

Join a leading team!

If you're looking for a challenging career with a leader, look to us. Princess House is a leading national direct sales organization located in Southeastern Massachusetts.

We are actively seeking an experienced Data Processing professional to assume the position of Programmer. This position requires a college degree or equivalent, and 2-3 years' programming experience in RPG II and III. A minimum of 1 year prior experience on a System 38 is required.

Combine your special personal and professional resources with a leader. Become an important member of a professional team. We offer a competitive salary and highly comprehensive benefit package, including full tuition reimbursement.

PH

Please submit resume, including salary requirements, in confidence, to: Personnel Department.

A Colgate-Palmolive Company
455 Somerset Avenue
North Dighton, MA 02764

PRINCESS HOUSE, INC.

An Equal Opportunity Employer M/F/H

SPSS inc.

An Environment For Creative Excellence

Two programmers began with a concept and built that concept into a multi-million dollar business. With the evolution of the business, came a style of management and a management philosophy that is unique.

Imagine an atmosphere where extremely creative people are part of a team that designs and enhances products as well as participates in determining the future direction of the company. A philosophy where highly skilled individuals can continue to grow both monetarily and technically.

At SPSS, we are developing user-oriented programs for statistics, data analysis, report writing, tabular and graphic display and data base management. Our software is highly machine-independent and we are developing state-of-the-art applications.

We are looking for people to develop and support software systems for mainframe, mini & micro computers.

Graphics Software Designer

Three or more years experience in designing and programming software for computer graphics display in FORTRAN, in one or more of the following areas: menu handler, screen manager, file manager or library system.

Graphics Product Designer

Three or more years experience in development, planning and analysis of computer systems and graphics. Proven creativity in new product development required.

Software Engineers

Five or more years experience in designing and programming large scale software, preferably in FORTRAN, C, or Assembler in any of the following areas: statistics, data analysis, report writing, tabular and graphic display and data base management.

We pay outstanding salaries for top professionals. If you are seeking a stimulating, progressive work environment where the management style provides a long-term career opportunity, send us your resume. We'll be happy to discuss our company, its benefits (including 4 weeks vacation per year) and our current projects. (PRINCIPALS ONLY) Send your resume to:

Manager, Technical Recruitment

SPSS, Inc.
Suite 3300, 444 N. Michigan Ave.
Chicago, IL 60611

Equal Opportunity Employer M/F

PRIORITY HIRING

INTERMEDIATE to SENIOR LEVELS

- Mini-Micro Systems
- Communications Networks
- Office Automation
- Simulation - SAS
- M.I.S. Applications
- Database Management Systems
- Systems Programming
- Software R&D/Design
- Manufacturing Automation
- Product Planning

DEC, HONEYWELL, IBM, NCR, UNIVAC

BRUCE A. MONTVILLE
MANAGING PARTNER

TOLL-FREE 1(800) 258-7328

EXETER 2100
NATIONAL RECRUITING CONSULTANTS
(603) 926-6712

COMPUTER PARK, P.O. BOX 4979
HAMPTON, NH 03842

ROMAC®

FLORIDA

MEET THE CHALLENGE

Florida's tremendous growth has created unique opportunities in state of the art environments for motivated, skilled data processing professionals.

PROGRAMMERS, ANALYSTS, SOFTWARE ENGINEERS, SYSTEMS PROGRAMMERS

UNLOCK YOUR POTENTIAL

Romac & Associates of Florida, Inc.

One Tampa City Center
Ste. 2360-C, Tampa, FL 33602
(813) 228-6327

901 SE 17th St., Suite 210-C
Ft. Lauderdale, FL 33316
(305) 525-8888

Programmer/ Analyst

Inspiration Consolidated Copper Company, a fully integrated leader in copper production, has an immediate career opportunity for a Programmer/Analyst. The operations include open pit mining, leaching/solvent extraction, ore dressing, tankhouse operations, smelting and copper rod fabrication.

The successful candidate should have four or five years experience in the design and process of financial applications, including experience with the IBM System 38 or the IBM System 34.

We offer a competitive salary commensurate with experience plus an excellent benefits package including paid relocation expenses.

For immediate consideration, please send resume including salary requirements to: Mr. Bill Johnson, Personnel Department, Inspiration Consolidated Copper Company, P.O. Box 4444, Claypool, AZ 85532.

INSPIRATION CONSOLIDATED COPPER COMPANY

An Equal Opportunity Employer M/F

EDP OPPORTUNITIES

MICRO'S

Mgr IBM P.C. Cntr, staff, deg	$51M+
Soft P.C. Comm, Internals, ALP, COBOL	$40M+
Fin Fortran, Micro, Deg	$33M

MBA'S

SAS Clin sys TSO Roscoe	$49M
DEC 10, Fortran, Cobol, Mktg deg	$47M
Fin Pub MBA, Fortran	$31M
Fin Corp, Fortran VM/CMS, Focus	$29M+
Focus, Fortran CMS	$27M+

SOFTWARE

LAN/COMM Plan IBM + Multi Hardware, Software	$61M+
IMS, PSB, DBD	$53M
4341 DOS, VS1, CICS	$47M
DOS, CICS Internals	$40M

PROGRAMMERS

CICS OS Bank	$40M
COBOL, CICS, Acctg Dev	$33M
PROG, CICS, OS	$27M

Call Bill Borrelli **(212) 349-3610**
WM. HARRIS ASSOC.
25 Ann Street **agency** **NY, NY 10038**



Programmer/ Analysts

(Manufacturing Applications)

Join a data processing organization working in the forefront of today's sophisticated MIS environment.

Activities will focus on the design, coding, testing and documentation of computer programs for manufacturing (MRP, shop floor control, purchasing) applications.

Background should include 2-3 years programming experience in CICS, with IDMS or related data base and heavy COBOL experience.

Northrop offers attractive starting salaries, career growth and comprehensive benefits. Send resume to: **A. ROMERO,** Employment Representative, **NORTHROP CORPORATION, Defense Systems Division, 500 Hicks Road, Rolling Meadows, IL 60008.** We are an equal opportunity employer and encourage minorities, females, veterans and the handicapped to apply. U.S. Citizenship Required.

NORTHROP

MAKING ADVANCED TECHNOLOGY WORK.

VIDEOTEX AND TELETEXT NEW TECHNOLOGY OPPORTUNITIES

Leading edge videotex company needs Programmers/Analysts/Project Managers with minimum 4 years VAX on-line experience for customer-oriented projects. **Call and send resume to Aregon International Inc., 2777 Summer Street, Stamford, CT 06905, (203) 964-1700.**

PROGRAMMER/ANALYST

Experience in R.P.G. II essential. Applicant should have a Bachelors Degree - Accounting and Business background helpful. Experience in systems design and System 34/38 very desirable.

Contact: Personnel Manager
C.E.S., Inc.
P.O. Box B
Camanche, IA 52730

SR. PROGRAMMER ANALYST

Los Angeles

Work closely with client, conduct feasability studies, design specifications; code, test & debug programs. Train users & maintain system. 45 hr. week 8 am to 5 pm. $2,300 per month. College grad & 2 yrs. exp. or related exp. in programming. Can substitute 2 yrs. of exp. in lieu of each year of college. If offered employemnt, must show legal right to work. **Send a copy of this ad and resume to job #4398, POB 865, Sacramento, CA 95804 no later than May 20, 1983.**

DATA PROCESSING PROFESSIONALS

DATA RESOURCE CORPORATION, headquartered in Atlanta, is a leader in quality Contract Programming and Consulting. Our continued growth in the Southeast and Southwest has created opportunities for versatile Professionals with state-of-the-art skills in Programming and Systems Design.

We are currently seeking individuals with at least 3 years of diversified programming experience, strong technical backgrounds, and who possess the desire to work in various stimulating Data Processing environments. IMS and CICS skills are of special interest, as are the abilities to travel or relocate.

We can offer you competitive salaries and comprehensive benefits programs, including bonuses and profit sharing. If you've been searching for a growth opportunity with a dynamic and progressive company with a Management team that "puts people first", then DRC is your answer.

For immediate consideration, please call BECKY FINLEY or NANCY TAYLOR at 1-800-241-6002, or send your resume to:

DRC | DATA RESOURCE CORPORATION
3301 Buckeye Rd.
Suite 103
Atlanta, GA 30341
(404) 455-7260
An EOE M/F

ROBERT HALF

FLORIDA

Be in Florida before school opens.

P/A - DOS/VSE/CICS/COBOL	25K
DBA - IMS/DB/DC/CICS	32K
SYS PROG - 2 years VM	38K
P/A - MVS/COBOL/CICS	25K
OPS MGR - Banking/VSE/CICS	28K
P/A - Sys 38/RPGIII/2 Yrs.	30K
MGR - DISTRIBUTION BKGD	35K
P/A - PICK OPER SYSTEM	24K
SYS PROG - VSE to MVS	35K
P/A - IBM/Banking/Loans	26K
P/A - IMS/PL1	26K
Tech Supp - HONEYWELL-L66	37K
P/A - DEC/DIBOL/2 Yrs	24K
SYS PROG - DEC/RSX-11M	35K
Sr P/A - DOS/VSE/Acctg/CICS	27K

Many others to choose from. All fees and relocation paid. Mail resume to or call collect:

STAN ALLEN
ROBERT HALF
OF TAMPA, INC.
1311 N. Westshore Blvd.
Tampa FL 33607
(813) 876-4191

NEW START-UP OPPORTUNITIES

Fox-Morris specializes in the placement of all programmers and systems analysts. Our present openings are with Top Fortune 500 companies with special emphasis on NEW START-UP opportunities on a local and regional basis. For a clear understanding of our client's needs and to know your true value in todays market, call Robert Montgomery at 919/872-2940 or send resume to

FOX-MORRIS
Personnel Consultants
Since 1962
3101 Poplarwood Court
Raleigh, NC 27625

TAKE THE INITIATIVE.

Join the innovators of electronic banking.

TTI, the company that introduced customer activated terminals to the banking industry, is leading the research and design of the electronic financial systems of tomorrow.

At Transaction Technology Inc., a research and development subsidiary of Citicorp, we've built a unique technical resource for systems design and implementation. This includes the industry's most sophisticated on-line financial transactions delivery system. We're developing new interactive network technology that promises to revolutionize global financial services as we know them. We continue to develop the most advanced information hardware/-software projects anywhere in the country.

We need Talented Technical Individuals to work in the following areas in support of on-line interactive delivery systems.

- On-line Interactive Financial Applications
- Communication Hardware Development
- Communications — Networking, Protocols, Local Area Networks, Network Control
- Operating Systems, Tools, Data Bases
- Data Base Processor, Hardware Development
- Specialized Intelligent Terminal Systems Development
- Personal Computers Software
- Advanced Product Research & Development including symbolic manipulations and inference

Languages and Operating Systems currently in use include: Assembly, C, PASCAL, COBOL, SCOBOL, TAL, our own specialized operating system, UNIX, 0/532, Tandem, various IBM operating systems, CP/M and TOPS 20. These run on Tandem, various micro-computers, personal computers, Perkin-Elmer, IBM, VAX, DEC 2060 and Quotron equipment.

Ours is a special environment, reflecting our standard of commitment. Our project group orientation provides unusually flexible and attractive working conditions. Benefit packages befitting a financial giant. Financial services at reduced rates. Tuition reimbursement. As a fast-paced, expanding company, we offer fast-paced advancement with commensurate salaries. In short, we do everything to ensure that the most gifted and experienced innovators will find no better career opportunity anywhere in the electronic world.

To learn more about TTI and our career opportunities, send your resume to:

Professional Employment, Department 044
3100 Ocean Park Blvd.
Santa Monica, CA 90405

or: Professional Employment
477 Madison Ave., 8th Floor
New York, NY 10022

Equal Opportunity Employer.

TTI
TRANSACTION TECHNOLOGY INC.
A Subsidiary of CITICORP

TAKE A TURN FOR THE BETTER...

There is a lot to be said about working with a $1.3 billion leader in highway transportation and related services—it's Ryder Truck Rental, Inc. It means a professional atmosphere, an ultra-modern facility, and a state-of-the-art MVS IMS installation.

SYSTEMS PROGRAMMERS

We are seeking an intermediate and senior level systems programmer with experience in MVS/SP internals. The major responsibilities include analyzing, planning, implementing and supporting MVS/SP 3, JES 2 and related products. A working knowledge of JES 2 and strong system diagnostic skills are required. RACF and VSAM are a plus.

Your expertise will be rewarded with our outstanding salary and comprehensive benefits package including relocation, stock purchase program, tuition reimbursement, fully paid medical/dental/life insurances, and an on-site fitness center.

Call collect (305) 593-3359 for an employment application, or send your resume in complete confidence to: Marty Anderson, Manager of Human Resources.

RYDER TRUCK RENTAL, INC.
P.O. Box 520816
Miami, FL 33152

Equal Opportunity Employer M/F/V/H

WASHINGTON, DC MEDICAL CENTER IMMEDIATE POSITIONS

Rapid expansion of progressive high-tech academic institution has created an urgent need for experienced analysts. Challenging opportunities in varied levels of development, analysis and design.

SENIOR SYSTEMS ANALYST

MIS team leader/leading the implementation of advanced integrated clinical information systems. Emphasis in management experience, preferably hospital clinical based information systems. Desire distributed data processing, IBM 370/4300 OS; major application languages, statistical packages, DBMS and data communications.

SYSTEMS ANALYST

Hospital financial systems, project management, analysis, design, coding and implementation of on-line billing/AR systems, computerized claims processing systems, DRG based analysis/reimbursement systems, computer based financial models. IBM 370/OS or IBM 4300/OS, COBOL, DL1, CMS & CICS.

Comprehensive benefits package including attractive tuition assistance program. **Interested professionals should call: Mr. Jackson (202) 676-4553, Mr. Herron (202) 676-4479 or send resume with salary requirements to our Personnel Services Division.**

George Washington
University/Medical Center
2125 G Street NW
Washington, DC 20052

EOE/AAE

IIT RESEARCH INSTITUTE Rome, New York

IIT Research Institute (IITRI) is an independent research organization founded in 1936 to provide research, development and design services to industry and government. Today, IITRI ranks as one of the largest and best known not-for-profit contract research organizations and continues to extend its capabilities to effectively meet research challenges of our changing society.

Software Technology Research

The IITRI facility in Rome, New York, has openings for experienced professionals to join a group of software engineers and computer scientists performing software engineering research and developing special purpose databases.

Applicants must have a BS or MS in Computer Science or a related discipline and a minimum of five to ten years experience in the computer field.

If you are interested in professional growth and increasing responsibility, in advanced educational opportunities, and would like to live in upstate New York where you'll enjoy casual living and easy access to year around recreational activities, send your resume to: **Personnel Department, C09, IIT Research Institute, 199 Liberty Plaza, Rome, New York 13440.**

equal opportunity employer m/f

IITRI IIT RESEARCH INSTITUTE

Few data processing service companies can convert your resume into coast-to-coast opportunities.

Martin Marietta Data Systems is one of the few.

Washington D.C. • New York
Philadelphia • Los Angeles

(Let us know your preference)

Over the past five years, Martin Marietta Data Systems has been registering between a 35-40% growth rate per year in Remote Computing Services, Turnkey Minicomputer Systems, Systems Integration and Professional Services. We have now reached a kind of "critical mass"– the point at which growth attains a momentum of its own. This has generated a continuous demand for Software Professionals at all levels, and from many backgrounds.

Excellent opportunities await Programmers, Programmer Analysts and Database Designers.

APPLICATIONS:	SOFTWARE:	HARDWARE:
General Business	COBOL with CICS COMMAND	IBM
Manufacturing	IDMS	DEC
Distribution	IMS	HP
Financial	ADABAS	
	MODEL 204	

Some travel may be required.

For immediate consideration, please send your resume in strict confidence to: P.H. Shockley, Martin Marietta Data Systems, 6305 Ivy Lane, Greenbelt, MD 20770.

MARTIN MARIETTA

An Equal Opportunity Employer Principals Only

Gould Incorporated, Ocean Systems Division, has excellent career opportunities for experienced

VAX, HP & RSTS-E Systems Programmers

GOULD *Electronics*

Successful candidates will be responsible for selection, generation, installation and modification of operating systems and systems level software. You will plan and evaluate new hardware/software, establishing department procedures and standards.

The positions require a BS in Computer Science or equivalent with 2+ years systems programming experience on at least one of the following:

- **VAX/VMS**
- **CV/CGOS**
- **HP/MPM**
- **PDP/RSTS-E**

Our professional compensation package includes competitive salary, generous benefits, and commitment to personal and professional growth. U.S. Citizenship is required. For immediate consideration forward your resume including salary history to: **GOULD DEFENSE SYSTEMS, INC., Ocean Systems Division, Dept. HR-13, 18901 Eucild Avenue, Cleveland, Ohio 44117, or call Cathy Gauthier, (216) 486-8300, ext. 1108, COLLECT.** An Equal Opportunity Employer, M/F/H.

Programmer/Analysts

Full Time
$25-55K

Contracts
$1000-2000/WK

IMMEDIATE NEEDS

CICS or IMS	Fla, NJ, NY
COBOL-OS or DOS	Fla, NJ, NY
PL1 or BAL	LI, NJ, NY
IMS, COBOL, PL1or BAL	NJ, NY
Datapoint or HP 3000	NJ, NY
VAX/VMS or UNIX-C or RSX	NJ, NY
BURROUGHS	NJ, NY
IMS/DBA's	Fla, NJ, NY
Focus/Ramis or Adabase	NJ, NY
PC's, Mini's/Micros	Conn, NY
Systems Progs	Fla, NJ, NY, Calif

ROHN ROGERS ASSOC.
(212) 921-1319
1140 6th Ave, NY, NY 10036

CONSULTANTS to $300/DAY $50,000 PER ANNUM

NYC/NJ/CT

- CICS Internals or Applications
- WANG 2200/VS COBOL
- MVS or VSE Internals
- IMS DB/DC & DBA's
- PL-1/COBOL/BAL
- DATAPOINT/ARC
- S/38 RPG III
- IDMS/DC
- UNIX/C

Call or forward resume to:
PARAMOUNT CONSULTANTS CORP.
275 MADISON AVENUE
New York City 10016
(212) 684-6606

UNUSUAL OVERSEAS OPPORTUNITY FOR EXPERIENCED T.I. MICROCOMPUTER SPECIALIST

Major Swiss company located in Zurich area requires bi-lingual (American-German) graduate in electrical engineering or computer science to work on new R & D project. Company developing new machine control system. Three-year minimum assignment in Switzerland with option for extension or re-assignment in the U.S. Requires minimum of three years experience in control systems and T.I. Systems, MPP, AMPL, Microprocessors, E-boards and I.C.s. Must be able to work in Basic, Pascal, T.I. Assembler, MPP and Fortran.

Excellent salary with all relocation expenses paid. Send detail resume with salary requirements to:

CW-B4144
Computerworld
Box 880
Framingham, MA 01701

OPERATIONS ANALYST

Atlanta-based regional office of a progressive life insurance company is seeking an experienced Operations Analyst.

Candidate must have strong technical skills coupled with management and administrative capabilities. Experience should include a background in: Large mainframe environment; Life 70, CFO, or Life-/Comm; OS/MVS; TSO; OS/JCL; and utilities experience; knowledge of automated scheduling system; knowledge of automated library system.

We offer a competitive salary and comprehensive benefit package as well as excellent opportunities for career growth.

Qualified applicants should send resume along with salary history to:

Personnel Manager
MILICO
2300 Parklake Drive
Suite 220
Atlanta, GA 30345

ADMINISTRATIVE SYSTEMS ANALYST

This position will involve the design of new administrative applications, evaluation of software for purchase, maintenance of current systems, and some programming. Systems in place are admissions, current student, alumni/development, financial aid, accounting, etc. These are written in BASIC-PLUS. Requirements for the position include a bachelors degree in computer science or a related field and at least one year of experience as an analyst. Those with a background in university administrative systems will be given first consideration. DePauw University supports RSTS/E on its administrative PDP11/45 computer system and has a VAX11/780 system running VMS for academic computing. The University is committed to building quality into computing services and is looking for a person with the same goals. Submit letter of application, resume, and three letters of reference to Dr. Carl Singer, Computer Center, DePauw University, Greencastle, IN 46135 no later than June 1, 1983. DePauw is an Equal Opportunity, Affirmative Action Employer.

SENIOR SYSTEMS ANALYST

A manufacturing and distribution company located in the Chicago area is seeking a qualified analyst who will provide planning, development, guidelines, and leadership.

The successful candidate will be capable of responding to user-related requirements and problems, achieving timely solutions, and assuring good service. The individual who can demonstrate a solid track record in materials, production, distribution, and financial application with IBM batch and on-line main frame experience will be offered an outstanding compensation and fringe benefit program. MRP, DRP, and APICS certification is desirable. A successful candidate can expect management opportunities. Send resume in strictest confidence to:

CW-B4145
Computerworld
Box 880
Framingham, MA 01701

DIRECTOR OF INFORMATION SYSTEMS

Career oportunity in multi-facility health care system in the Pittsburgh area. This position will be responsible for directing the conversion of financial systems from Burroughs into "state-of-the-arts" software, running on IBM 4331. The qualified candidate should have a bachelors degree in related discipline. Minimum of 5 years experience with IBM systems and strong project management capabilities are necessary. Knowledge of computer hardware and telecommunication services are highly desirable.

Preference will be given to candidates with previous health care systems experience. The Director of Information Systems will be responsible for all activities in the data processing and information systems area including financial, human resources and clinicals.

Send resume and salary history to:

CW-B4149
Computerworld
Box 880
Framingham, MA 01701

FIELD ENGINEER IBM SYSTEM/34

WMC is in need of two IBM F.E.'s, for openings in NJ, NY, CT. Salary and Benefits to-match your skills.

All replies confidential. Please call William Marion at (201) 343-4554, at the William Marion Co., Inc., Hackensack, NJ.

APPLICATIONS PROGRAMMER/ANALYST

CENTRAL OREGON SKI & RECREATION AREA

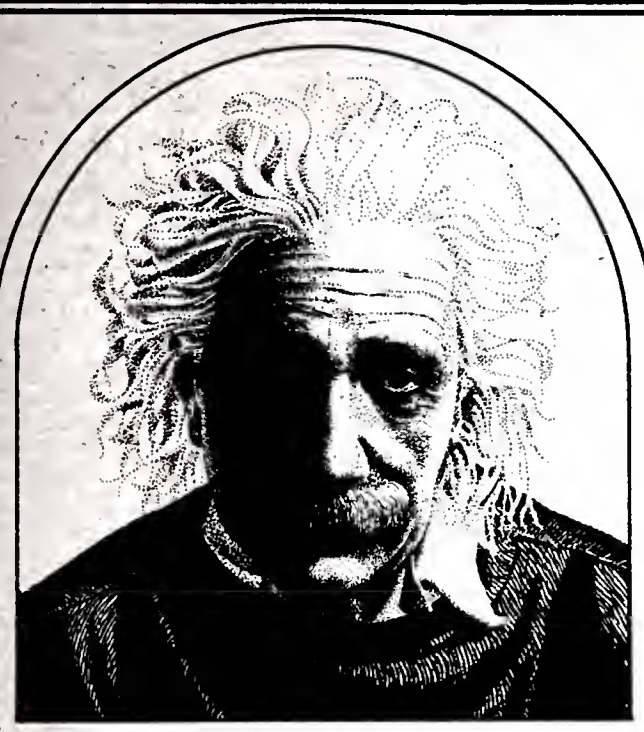
Minimum qualifications: 3 yrs. responsible applications programming experience including 1 yr. as programmer analyst in a business-type environment and working experience using BASIC. Community college/university adminstrative applications and experience with PDP 11 series computers using RSTS/E highly desirable. Degree in Business Data Processing, Computer Science or related area a definite plus. Salary commensurate with qualifications. APPLICATION DEADLINE: MAY 25, 1983. Position to begin end of June.

Contact Personnel Office, Central Oregon Community College, NW College Way, Bend, OR 97701 for a required application. (503) 382-6112, ext 221.

EEO/AA EMPLOYER

DATA PROCESSING MANAGER

City of Westminster, Colorado (population 54,000) is recruiting for a Data Processing Manager. Position reports to the Finance Director and supervises a staff which provides City-wide data processing services. Responsibilities include the development, training and coordination of all aspects of data processing for the city. Must have working knowledge of BASIC and FORTRAN languages. Experience working with PRIME or MICRO-DATA is preferred. Graduation from an accredited 4 year university or college with major coursework in computer science, business administration or closely related field. Experience in municipal government, data processing, systems analysis and systems design or an equivalent combination of education and experience. Salary - $32,000 to $35,000 depending on qualifications. Applications accepted until 5 p.m., Tuesday, May 31,1983 at Personnel Office, 3031 W. 76th Ave., Westminster, CO 80030. EOE



There is no simple formula for making career decisions!

Meaningful challenge, on-going technical training and defined promotional paths are important to you...and to us as well. Our nationwide team of Data Processing specialists is trained to search for and identify opportunities that will enhance your career.

Let us direct you to the most important compensation of all, WORK SATISFACTION. Check your white pages and call today!

COMPU SEARCH® A Division of Management Recruiters

MR MANAGEMENT RECRUITERS®

Understanding your DP needs is our first concern!

GUY F. ATKINSON COMPANY

DATA PROCESSING OPERATIONS MANAGER

Guy F. Atkinson Company, a major international construction firm, seeks a professional manager for their corporate DP Operations consisting of 2 IBM 4341 CPU's using VM/CMS and DOS/VSE based systems.

Qualified individuals will have:
- BS degree or equivalent experience;
- 4+ years' experience managing complex operations department;
- Extensive knowledge of local and remote interactive and batch applications.

Major responsibilities include:
- Planning, organizing, directing a large computer operations section;
- Developing standards and procedures to maximize hardware and software resource utilization;
- Interfacing with marketing and technical vendor personnel to support systems requirements;
- Development of training programs for operations personnel.

This outstanding position offers professional development, excellent salary and fringe benefits package. Send resume and salary history to: Director, Personnel Development, Guy F. Atkinson Company, 10 West Orange Avenue, South San Francisco, CA 94080.

An equal opportunity employer.

No agency calls.

MOVE UP TO COLORADO. MOVE UP TO STC.

Storage Technology Corporation, a young, Fortune 500 company, is a leading supplier of high-performance computer peripheral equipment. Located at the base of the majestic Rocky Mountains, near Boulder, Colorado, Storage Technology offers an outstanding career opportunity combined with a lifestyle second to none.

The following opportunities exist to be a part of the development of systems and architecture to support remote maintenance of new CPU, optical storage and other advanced products:

SENIOR SOFTWARE ENGINEER

Ideal candidates will possess 8 - 10 years experience in telecommunications and complex hardware/software systems development. Outstanding oral and written communication skills necessary. CICS and IDMS experience and detailed knowledge of IBM hardware/-software architecture and internals of one or more IBM virtual operating systems highly desirable.

SENIOR SYSTEMS ANALYST

Ideal candidates will have 8 - 10 years experience designing and implementing large, high quality on-line systems in an IBM environment. Must have outstanding oral and written communication skills and knowledge of structured analysis and design techniques. CICS and IDMS experience desirable. Responsibilities include the development of long-range information systems plans. Will identify requirements and functional specifications for large state-of-the-art data base systems.

SYSTEMS PROGRAMMER

Ideal candidates will be experienced in and able to assume complete responsibility for MVS/SP, ACF/VTAM and CICS. Additional consideration will be given to candidates with experience in VM/SP or IDMS. Responsibilities include system generation, product installation, performance tuning and hardware and software planning.

SOFTWARE ENGINEER

Ideal candidates will have a minimum of 2 years experience in IBM assembler language. Responsibilities include the development and maintenance of software tools used worldwide by STC Field Engineering.

SENIOR INSTRUCTOR SOFTWARE SUPPORT

Ideal candidates will be degreed, fluent in IBM 370 assembler language, with direct experience in IBM OS and have experience with MVS systems programming with emphasis in software course development and instruction. Knowledge of large IBM operating systems internals (MVS or VM) is a must. Responsibilities include planning, organizing and conducting formal classroom instruction and on-the-job training to prepare software representatives to maintain and troubleshoot software systems failures.

Storage Technology offers an excellent benefits package which includes health, dental and life insurance, stock purchase plan and much more. For immediate consideration, please send resume to Cindy Dascher, STORAGE TECHNOLOGY CORPORATION, MD 29, Dept. 509, #94, 2270 S. 88th Street, Louisville, Colorado 80028.

Equal Opportunity Employer



STC Storage Technology

EASTERN & SUNBELT LOCATIONS

PROGRAMMERS
SYSTEMS ANALYST
SOFTWARE ENGINEERS

Are you so busy doing your job that you've forgotten your career? In the rush of todays responsibility; many people are missing tomorrows opportunities. Invest a few minutes call PAM SPEARS CPC or send a confidential resume. You may find that you qualify for a position in an ideal location with even greater responsibility than you have now. All positions fee paid.

CALL TOLL FREE
800-334-4220
IN NC (919) 484-4101

NATIONWIDE PERSONNEL SERVICE, INC.
P.O. Box 35925
Fayetteville, N.C. 28303

SR PROG/ANALYST

Fortune 500 mfg is expanding!! IBM OS JCL, utilities, VSAM & COBOL. Sys design and project control of administrative sys. Fringes include stock purchase.

Salary $25-30K
FEE PAID (513) 224-0600

ROBERT HALF
OF DAYTON, INC.
ONE FIRST NATIONAL PLAZA
DAYTON, OH 45402
Lic. DAPC Member

PROGRAMMER ANALYST

Community College needs Programmer Analyst to establish feasibility of machine adaptations of various operations; prepare systems, flow charts, programs and documentation. Will analyze new and revised applications; design, develop, implement and maintain computer programs. Will require knowledge of principles and techniques of systems analysis and design; methods and techniques of structured programming and Data Base Management Systems. Experience using the HP 3000 series computer systems, MPE operating system and Image DBMS is desirable. This is a 12-mo, 40 hr/5 day wk position. Salary: $1793 per month. Accepting applications through 5/20/83. For further information contact: Palomar College, (619) 744-1150 or 727-7529, ext. 2200. EOE

Making Our Mark In '83

LABORATORY INFORMATION MANAGEMENT SYSTEMS

SAN FRANCISCO BAY AREA

At Varian Instrument Group, we are involved in designing and developing advanced Laboratory Information Management Systems. Environment consists of VAX-11 computers communicating with other mini- and microcomputers and laboratory instruments.

If you are a dedicated Software Professional, and interested in "Making YOUR Mark In '83", with lab automation, we would like to talk with you regarding our current needs.

☐ SOFTWARE ENGINEERS

- Develop I/O communications between DEC-VAX computers and other microcomputers and lab instruments and instrument controllers.

  Requires minimum 4 years programming experience, to include knowledge of DEC communications, e.g. Unibus and device drivers.
- Perform programming tasks using structured design techniques, to include implementation of database queries and reports.

  Requires minimum 2 years programming experience, to include VAX/VMS, DATATRIEVE and VAX DBMS; Basic & Pascal languages.

Visit Our Booth at BPI-Anaheim—May 16 & 17

Come by our booth for a personal interview during NCC or forward your resume. Varian offers outstanding growth opportunity as well as competitive salary and benefits packages. Please send your resume to Professional Employment, 2700 Mitchell Drive, Walnut Creek, CA 94598. An equal opportunity employer f/m/h/v.

Varian Instrument Group

SIGNETICS ALBUQUERQUE

Our goal is to become the leader in integrated circuits, both in product excellence and in volume. Here in Albuquerque, we have made a multi-million dollar commitment to this goal. The following openings are available at our new MOS development facility:

SR. SYSTEM PROGRAMMER-VAX/VMS
To operate and maintain VAX/VMS systems; program at assembly level; interface to other systems and equipment. Will be responsible for system tuning; production system architecture development and implementation; support for data base activities, applications programming, and user systems. BSCS/BSCE; MSCS preferred. 5-7 years experience with DEC system programming and 2-3 years VAX system programming. Must have experience in all phases of system programming, to include system configuring, crash dump analysis, assembly level programming. C366.

SYSTEM PROGRAMMER-RSXIIM
General support of RSXIIM Operating System. To be responsible for assembly level programming, equipment interface to DEC PDP II Systems; support high level language users and user systems. BSCS/BSCE with 5-7 years experience with DEC systems and 2-3 years experience with RSXIIM system programming. Must have experience in all phases of system programming. C238.

Signetics offers excellent salaries and a full range of company paid benefits. Send your resume in confidence to: **Signetics Albuquerque, 9201 Pan American Freeway N.E., Dept. C509, Albuquerque, NM 87184. Please refer to position number.**

Equal Opportunity Employer M/F/H

signetics
a subsidiary of U.S. Philips Corporation

Programmer/Analysts
To
$30K

Growing company has expansion position. Interface with users and management. New development! High visibility and recognition! Prefer Property & Casualty experience. Prefer 3-4 years background in COBOL, with either DOS/VSE or OS IBM environment. Beautiful Metropolitan area. Please call Lee Garrett, Data Processing, (818) 842-3860 or send resume to:

FANNING Presonnel of K.C., Inc.
Bryant Bldg., 1102 Grand Ave.
Kansas City, Missouri 64106

Data Processing

Programmers

Three positions are available for people with C Programming Language and Unix OS experience.

We are a new start-up software development company in Walnut Creek. For consideration, please forward a detailed resume with pertinent salary information in confidence to: Manager of Staffing and Recruitment,

Information
Systems Insight
675 Ygnacio Valley Rd.,
Suite #B201
Walnut Creek, CA 94596

equal opportunity employer m/f/v/h

UNIX/C

$25,000 to $50,000
APPLICATIONS & SYSTEMS
Over 300 Openings Nationwide
Client co's pay all fees
Call or send resume
in confidence to:
J. ROGERS ASSOC
(609) 771-8282
2999 Princeton Pike, Dept C-D
Lawrenceville, NJ 08648

SYSTEMS ANALYST. Design, implement, code & test systems. Experience converting manual systems; system testing; enhancing existing systems; tech support for production systems. Knowledge of COBOL, PL/1 required. B.S. Degree in Math, Computer Science or Data Processing. 2 yrs. or 2 yrs. equivalent exp. $31,000/yr to work 40 hrs/5 days/wk. Pinkerton Computer Consultants, Inc. 111 Broadway NY, NY 10006. Please Send Resumes.

Director of Administrative Computer Services

Wright State University
Dayton, Ohio

(Search Reopened)

The director is responsible for all administrative computing activities, including maintenance of the operating system and operation of the main university computer. These activities must be coordinated closely with the director of the Research and Instruction Computation Center to ensure proper operating system maintenance and good service for the academic users of the main facility.

The university presently uses an IBM 3031AP processor with IMS DB/DC.

A bachelor's degree is required; a master's degree preferred and/or equivalent combination of education and/or experience. University administrative computing experience highly preferred. At least three years' management experience at the assistant director level or the equivalent is desired. Experience must include the use of an on-line data base system.

Wright State University is one of thirteen public universities in Ohio and has an enrollment of nearly 15,000 undergraduate and graduate students. The university's annual operating budget is approximately $78,000,000. Wright State offers a wide range of academic programs in ten colleges and schools, including doctoral programs in biomedical sciences, medicine, and professional psychology.

Deadline for application is May 20, 1983. Salary is negotiable, depending on qualifications. Applications or nominations, with curriculum vita and other support data, should be sent to Joseph D. Hamel, Vice-President for Administration, Wright State University, Dayton, Ohio 45435. WSU is an equal opportunity employer.

WRIGHT STATE
Wright State University
Dayton, Ohio

HIRING?

More computer people read Computerworld than any other newspaper in the United States - more than half a million computer people every week. And, among our 529,650 readers at user organizations about half claim to look at recruitment ads at least every other week (only a small percentage say they never look at recruitment ads). No wonder Computerworld carries more recruitment ads for computer people than any other publication. To place your ad or to get a rate card with complete details on Computerworld Classifieds, call or write:

Classified Advertising
Computerworld
Box 880
Framingham, MA 01701

617-879-0700

1-800-343-6474

Manager, Communications Research Computer Facilities

MIT's Research Laboratory of Electronics seeks qualified individual to be responsible for overall operation and maintenance of computer systems used for research in hearing and speech communications. Responsibilities include: installation, integration and maintenance of utilities for scientific programming and statistics; maintenance of RSX and VMS operating systems running on PDP/11 and VAX computers; applications and scientific programming, including interactive real-time graphics and sonics; and supervision of both technical support and service staff.

Candidates should have Master's level training or equivalent in electrical engineering and computer science, including signal processing. Experience with RSX/11M and VMS operating systems required.

Please send 2 copies of resume, referencing Job No. R1018 to: Ms. Sally Hansen, MIT Personnel Office, E19-239, 77 Massachusetts Avenue, Cambridge, MA 02139. MIT is an equal opportunity/affirmative action employer.

MIT

START UP OPPORTUNITY! Data Processing Long Island Based

A newly acquired division of a multi-billion dollar corporation is seeking programmer analysts and systems programmers for a **'START UP SITUATION'** in a **'NEW DATA CENTER'** on Long Island.

3-5 years exposure to 1 or more of the following is preferred: CICS, IMS, DL-1, MVS, and COBOL.

A competitive compensation package commensurate with experience based upon qualifications will be offered. Direct reporting relationships to **'KEY MEMBER'** of decision making management team!

Forward resume stating accomplishments, career objectives, technical areas of expertise with salary history to:

Director DP Technical Services
CW-B4150
Computerworld
Box 880
Framingham, MA 01701

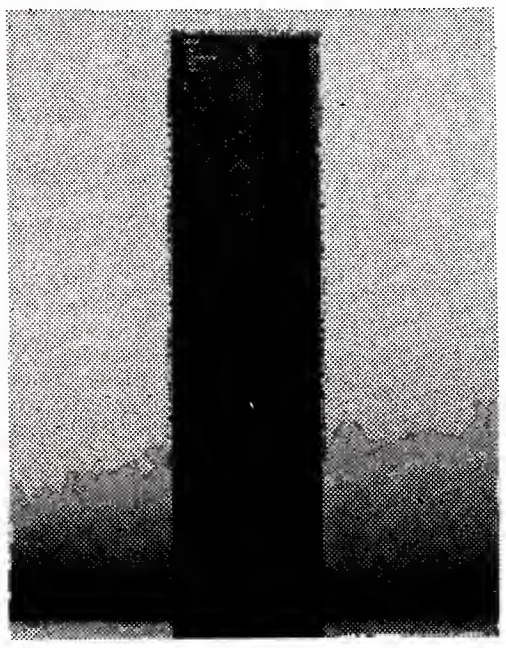
All inquires will be treated in complete confidence. Our employees are aware of this advertisement.

Engineers, Programmers, Systems Analysts

Small business systems...large career potentials...that's NCR/Columbia, SC

Our Engineering & Manufacturing facility in Columbia is one of NCR's most diversified operations. We're the people responsible for the highly successful "TOWER 1632" microprocessor system. The people responsible for many of NCR's strides in data communications. The people responsible for NCR's growing position in word processing and office automation systems.

We can strategically position you in a $3.5 billion computer corporation that sees small business systems—and the people behind them—as vital to its future. If you have large ambitions in hardware or software design, match your background against our checklist. If you discover a clear fit, contact us promptly.



Sunbelt Living At Its Best

Columbia—state capital, model city, and home of the University of South Carolina—offers a choice of urban, suburban and rural lifestyles. Real estate prices and taxes are among the lowest in the country. The Smoky Mountains, Myrtle Beach, Charleston, Hilton Head Island and Atlanta are within easy reach. Professional environment...Living environment...let us tell you more about both.

See us at the BPI Technical Career Fair at the Sheraton Anaheim

SPECIAL INTERVIEWS

during the NCC SHOW in Anaheim, CA
Monday thru Thursday, May 16-19
Call (Collect) in advance to schedule a one-on-one briefing session in California
Mr. Glenn Rannick, (803) 796-9250

Or send a detailed resume, complete with salary history/requirements, in strict confidence to: Mr. Glenn Rannick, Engineering & Manufacturing, NCR Corporation, Dept. D55, 3325 Platt Springs Road, West Columbia, South Carolina 29169.

NCR
Complete Computer Systems

An equal opportunity employer

We have growth-created openings at several levels...All require a BSEE or BSCS and at least 3 years experience in one or more of the following:

UNIX*
- Kernel (Scheduler, Resource Management, File System)
- Utilities (System 5, Berkeley)
- 68000,68010,68020

Communication Software
- Asynchronous and Bisynchronous Protocols
- SNA
- X.25
- Cluster Controllers
- Concentrators
- Front End Processors
- Local Area Networks

Microcomputer Software
- 16/32 Bit Microcomputer Systems Definition
- Software Tools
- Operating Systems
- Real Time High Level Languages
- User Interface
- Data Base
- Diagnostics

Design Engineering
- Working knowledge of Microcomputer Systems Architecture
- Design of Hardware Interface to 8/16 Bit Microprocessors
- Logic Design Utilizing Schottky, TTL, and MOS/LSI Logic
- Fault Tolerance System Design

Word Processing/ Office Automation
- Office Systems Networks
- Office Systems Architectures
- Advanced Development of Office Products
- Application Software Development
- Integrated Voice System Data
- Third Party Software Evaluation

*UNIX—a trademark of Bell Laboratories

Programmers & Programmer Analysts

The United Nations Development Programme administers one of the world's largest multilateral funds for technical assistance to developing countries. Challenging opportunities exist for qualified programmers and programmer/analysts in the Division of Management Information Services to participate in the development of information systems in a wide range of application areas. A number of assignments of varying duration are currently available at the New York headquarters of UNDP.

Individuals selected for this programme must have the ability to work well within teams developing complex on-line systems. Languages presently used are COBOL/CICS, MARK IV, PL/1 and INQUIRE. A minimum of 5 years programming experience in one or more of the above languages as well as a university degree are required.

These positions offer an excellent compensation package. Visa and relocation assistance will be offered where applicable. Only qualified applicants will be reviewed. For consideration, please submit a detailed resumé to:

Director of Personnel
UNITED NATIONS DEVELOPMENT PROGRAMME
One United Nations Plaza
Room DC-1818, Dept. C
New York, NY 10017 USA

UNITED NATIONS DEVELOPMENT PROGRAMME

SYSTEMS ANALYSTS AND PROGRAMMERS FOR SUNBELT LOCATIONS

Job dissatisfaction, complacency, and frustration are the biggest obstacles to overcome to achieve one's career goals. Every day new career opportunities pass us by because we are unaware of their existence. Let us keep you abreast of what your true value is in the market place. Absolutely no obligations, please call or write Keith Reichle, CPC, Data Processing Specialist.

Dunhill
Of CHARLOTTE, INC.
6401 Carmel Road, Suite 107
Charlotte, North Carolina 28211
800-438-2012
(NC Call)
(704) 542-0312

DATA PROCESSING FACULTY

Faculty position (9 month calendar) to assist college wide faculty with computer applications to various academic disciplines. The position will also include a teaching assignment; after a transition of several years it will shift to primarily teaching. Instructional computing facilities include an IBM 4331, a DEC PDP 11/70 and two micro computer laboratories. Preferred qualifications include a masters degree in an appropriate discipline, computer-related experience, programming competency in two commonly used languages, a familiarity with academic computing applications, and teaching experience. Candidates with bachelors degree and significant experience will be considered, as will those with a partial combination of the above qualifications. The deadline for receipt of completed formal application is June 20, 1983. Contact Personnel Office, (215) 861-5460/5461, Northampton County Area Community College, 3835 Green Pond Rd., Bethlehem, PA 18017. An equal opportunity affirmative action employer.

Senior Data Communications Engineer

Network Design, Implementation & Performance Analysis

With new product development as the key to Tesdata's growth and continued leadership in the field of data communications networking, we are seeking a seasoned professional to become an integral member of the design and analysis team tasked with the evaluation of our current and future network performance products.

Primary duties will include development of performance strategies for Tesdata products and the specification of capabilities and future enhancements.

Required is a BSEE or equivalent with approximately 5-9 years experience in either the design/implementation of computer networks or network performance analysis using hardware/software tools. Specific knowledge of protocols such as SNA/SDCC and X.-25, and direct exposure to a multiplicity of network architectures is required.

To further explore this outstanding opportunity which features a competitive salary and complete benefits including relocation assistance, call 1-800-336-0170. In Virginia, call 703-827-4000. Or, send your resume to D.K. Anderson, Dept. 656, 7921 Jones Branch Drive, McLean, VA 22102.

Tesdata SYSTEMS CORPORATION

EOE M/F PRINCIPALS ONLY

PROGRAMMERS

Idaho First National Bank, one of the Northwest's most progressive financial institutions is seeking career-oriented Professionals to assume key responsibilities in the development of new systems.

Programmer/Analysts

Utilize minimum 3 years COBOL programming and an additional year of specific responsibility in analysis in these positions.

Senior Programmers

Apply 2 years related experience which includes OS/JCL proficiency. CICS experience a definite asset.

Programmers

Growth opportunities for professionals with 1-2 years related experience and OS/JCL proficiency.

• Proven related experience in a large-scale IBM OS/VS1 or MVS environment is a requisite for all positions.

If you have at least 3 years COBOL programming experience in a large-scale IBM OS/VS1 or MVS environment, we would like to talk with you.

Individual responsibility, ongoing challenge and professional recognition provide a stimulating, growth environment at Idaho First. Plus you will find in Idaho an exceptional quality of good living, outdoor recreational opportunities and excellent schools.

Idaho First offers competitive salaries and benefits, including paid relocation. For immediate consideration, please send resume to Dave Lovell, Placement Manager, Idaho First National Bank, P.O. Box 8247, Boise, ID , 83733, or call COLLECT (208) 383-7037. An equal opportunity employer. PRINCIPALS ONLY PLEASE.

Idaho first

IDAHO FIRST NATIONAL BANK
AFFILIATE OF MOORE FINANCIAL GROUP

ADMINISTRATIVE SYSTEMS ANALYST/PROGRAMMERS AUBURN UNIVERSITY

An opening exists for a Systems Analyst/Programmer to develop applications in support of financial and student administration.

Minimum Qualifications: Bachelors Degree in accounting, business, administration, engineering, mathematics or a related field. Three years experience in computer programming.

Desired Qualifications: Strong management skills. A background in MVS/SP, TSO, SPF, CICS, and COBOL. A real plus would be experience in database and 4th generation on-line system development.

Auburn University is a state-supported land grant institution and the largest University in the State of Alabama. The institution is a comprehensive research oriented University with strong areas of concentration in Agriculturally related Sciences, Natural Sciences, all fields of Engineering and other disciplines. The University is located in a small urban community of about 60,000 total residents. Located within the area are excellent recreational and social opportunities.

Please send resume with salary requirements to:

William C. Wade
Director, Information Systems
Division of University Computing
144 Parker Hall
Auburn University, AL 36849

Application Deadline: May 23, 1983

Auburn Univerisity is an Equal Opportunity Employer

SOFTWARE DEVELOPMENT
BURROUGHS LARGE SYSTEMS

Methodist Hospitals of Memphis, a 1300 plus bed multi-hospital system is leading the way in health care delivery and EDP technical services. We are currently searching for results-oriented individuals who are interested in a fast paced, positive, and dynamic environment:

SENIOR SOFTWARE SPECIALIST - DATA COMMUNICATIONS

Responsible for networking of terminals and mainframes within a multiprocessor Burroughs B3700/B3800, a multi-processor Burroughs B7800, Wang VS 45's and various other micro's and mini's in local and remote locations. The prime initial task would be the design and implementation of the migration of the network and transaction processing control systems between an existing B3700/B3800 network to a B7800. Requires a minimum of 3-5 years experience with Burroughs large systems support and 2 years data communications experience. Four year college degree preferred.

SENIOR SOFTWARE SPECIALIST

Responsible for generation and support of Burroughs B7800 multiprocessor operating system, compilers, data base systems, and system software related utilities. Application development support is also a job function including support and development of an acquired application program generator and other programming aids. This support activity is critical to the current effort of migration from Burroughs muiti-processor medium systems (B3700/B3800) to Burroughs muitiprocessor large systems (B7800). Must have 2-3 years Burroughs large system support experience. Four year degree preferred.

Interested and qualified individuals are asked to submit a resume with salary expectations to: Marc Rubenstein, Personnel Services Division.

METHODIST HOSPITALS OF MEMPHIS
1265 Union Avenue
Memphis, Tennessee 38104
An Equal Opportunity Employer M/F

FACULTY POSITION

Tenure-track faculty position starting August 22, 1983 in business-oriented computer program offering BS and AAS Degrees. Preference will be for holders of a Master or Doctorate Degree in a computer related area with some application and teaching experience. Should be able to teach in at least 2 of the following areas: Systems Analysis, CICS, Operating Systems or Programming Languages (COBOL, PL/1, RPG or BASIC).
Deadline for applications: June 15, 1983.
Competitive salary and benefits; rank commensurate with qualifications and experience.
Purdue University Calument is a 7500+ student, urban university located in NW Indiana approximately 25 miles SE from Chicago, in a heavily computerized industrial area.
Please send resume to: Prof. J. S. Quasney, Purdue University Calumet, Hammond, IN 46323.

An Equal Opportunity/ Affirmative Action Employer

DATA BASE MANAGER

Salary $31,632 - $34,908. Requires substantial experience in the design, development, programming, implementation, and maintenance of major applications for large scale computers with experience in designing and maintaining data bases, and providing for data base integrity and security. Please send resumes to: San Diego County Dept. of Education, 6401 Linda Vista Road, San Diego, CA 92111, (619) 292-3592.

VICE PRESIDENT SALES

Established international IBM computer distributor has an immediate opening for a VP of Sales. Responsibilities include directing sales force which sells dealerships domestically and internationally. Liberal fringe benefits and excellent salary. Please supply detailed resume and recent income experience.

Reply to CW-B4148
Computerworld
Box 880
Framingham, MA 01701

SYSTEMS ANALYST/PROGRAMMER
AT LOS ALAMOS NATIONAL LABORATORY

The Los Alamos National Laboratory offers a challenging and diverse career opportunity for an individual with demonstrated professional expertise in the area of IBM computer operating system security. The position requires a thorough understanding of and familiarity with the IBM OS/VM, OS/VS-1, and MFT operating systems as well as JCL, ALC, and FORTRAN languages running on IBM 370 hardware. The position requires the ability to design, test, and implement operating system security software for non-standard IBM operating systems.

The educational requisites for this position specify a Bachelor's or higher level degree in computer science or related field or an equivalent combination of education and experience in the field of Systems Analysis, Programming or Computer Science.

The Los Alamos National Laboratory is operated by the University of California for the Department of Energy. The Laboratory is located in the mountains of northern-central New Mexico at an elevation of 7200 feet. The living is uncrowded, casual; the environment is pollution free. The sunny climate is superb; cool summers and mild winters. Los Alamos has an excellent school system. Recreational opportunities abound including hiking, camping, fishing, skiing, tennis, etc. The Laboratory offers a competitive salary structure and an excellent fringe benefits package including 24 days annual vacation.

To apply, send resume in confidence to:

Elmer Salazar
Associate Group Leader, DIV 83-P
Personnel Administration Division, MS P206
Los Alamos National Laboratory
Los Alamos, NM 87545

University of California
Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

An Affirmative Action/Equal Opportunity Employer. Women, Minorities, Handicapped, and Veterans are urged to apply. Citizenship is required.

SYSTEM PROGRAMMER NEEDED

Umm Al-Qura University, located in Makkah, Saudi Arabia is now taking applications for a system programmer.
Requirements:
- Applicants should have at least 3 years experience as a system programmer on IBM computers using DOS/VSE.
- Experience on IBM 4300 under OS/VS is preferred.
- Applicants should have knowledge of the Arabic language.

All resumes and proper credentials should be sent to:
Umm Al-Qura University Office
c/o Saudi Arabian
Educational Mission
2425 W. Loop South
Ste. 654
Houston, TX 77027
Deadline for all resumes will be June 20, 1983.

OVERSEAS

Our client companies in the Middle East are now seeking qualified DP professionals in the following areas:

D.P. Managers
ADF Analysts
Software Engineers
Industrial Comp. Engs
Senior System Analysts
Sys. Programmers/Engs
PL/1 Programmers
Telecommuiniction Engs

Most positions are single status, one year contracts with food, housing, bonus, vacations and tax free status. Send resume at once to:

Steve Eddington, V.P.
International Personnel, Inc.
4433 West Touhy Ave.
Lincolnwood, IL 60646
(312) 982-9330

All Inquiries Acknowledged

CLASSIFIED ADVERTISING ORDER FORM

Computerworld's Classifieds work.

Issue Date: Ad closing is every Friday, 10 days prior to issue date.

Sections: Please be sure to specify the section you want: Time and Services, Software for Sale, Position Announcements and Buy/Sell/Swap. (Available upon request: Software Wanted, Turnkey Systems and Real Estate.)

Copy: We'll typeset your ad at no extra charge. Please attach CLEAN typewritten copy. Figure about 25 words to a column inch, not including headlines.

Cost: Our rates are $112.70 per column inch. (A column is 2" wide.) Minimum size is two column inches (2" wide by 2" deep) and costs $225.40 per insertion. Extra space is available in half-inch increments and costs $56.35. Box numbers are $15.00 extra.

Billing: If you're a first-time advertiser, (or if you have not established an account with us.) WE MUST HAVE YOUR PAYMENT IN ADVANCE.

Ad size desired:

_____ columns wide by _____ inches deep.

Issue Date(s): _____

Section: _____

Signature: _____

Name: _____

Company: _____

Title: _____

Address: _____

Telephone: _____

Send this form to:
CLASSIFIED ADVERTISING,
COMPUTERWORLD
375 Cochituate Road, Box 880,
Framingham, MA 01701

Data Processing

A great company must first have great people Levi Strauss & Co.

Levi Strauss & Co. is the world leader in the apparel industry. Because of our resourceful, energetic, and dedicated employees, we're ready to take advantage of the opportunities the '80s have to offer. We're now looking for the following key data processing professionals to help us meet our goals, and have positions available in both our domestic and international groups.

Domestic

Senior career opportunities are available for skilled **Analyst Programmers** to provide:

- design through implementation of financial systems. These positions utilize extensive COBOL and ALC expertise in an IBM 30XX OS/MVS, IMS environment
- continued development and enhancement of terminal order entry systems. Solid COBOL, Easytrieve a plus, superior interpersonal skills as a user liaison.

We also have a **Project Management** position available for the individual who has demonstrated:

- effective supervision of DP professionals, through COBOL, IMS data base, and financial systems knowledge, and excellent communications skills.

Our highly successful Telecommunications Group, responsible for implementing our network systems, is now seeking:

- A **Senior Telecommunications Systems Programmer** to install and maintain network software. This growth position requires extensive ALC, plus VTAM application programming, NCP, NCCF, NTO and NPPA support in a large scale IBM OS environment which includes field sites utilizing DOS.

International

We have a newly created position available:

This **Data Base Analyst** will be responsible for creating the data dictionary and providing data base consultation to the international data processing staff. Knowledge of HP 3000 environment with IMAGE; IBM 43XX and TOTAL experience helpful.

To find out more about these, or other opportunities, please send your resume, with salary history to: Levi Strauss & Co., Levi's Plaza, Attn: RW-5, P.O. Box 7215, San Francisco, CA 94120-6914. Local applicants preferred. We are proud to be an equal opportunity employer through affirmative action.

Levi's
LEVI STRAUSS & CO

QUALITY NEVER GOES OUT OF STYLE.

EDP PROFESSIONALS career specialists $25,000-$65,000

BIG "8"—PATH TO PARTNER. $50.000. Big "8" acctg. firm is embarking on new effort to expend mgmt. consulting practice w/emphasis on sys. design & implementation. Req's proj. ldr. w/exc. academic credentials who will demonstrate potential to achieve partnership status on a fast track. Contact M. Feiger. NY (212/947-4400).

MGR. SOFTWARE DEV.. $47.000. New pos. Hire & manage staff of SW pros dvlp'ng. op. syst. & applic. SW for new workstation for large full-line computer mfg. Exciting. successful environ. Contact H. Greene. Phila. (215/561-6300).

MGR., TECH. SVCS. & OPNS.. $40.000. New pos. w/expanding MIS dept. of "Fortune 500" corp. Manage opns., syst. software. DB. 3 remote RJE sites. 4341 DOS/VSE. Attractive. low-cost. Mid-Atl. rural area. Contact H. Greene. Phila. (215/561-6300).

PROJ. LDR. & PROG. ANALYST to $36.000. Major NJ mfg. corp. has retained us EXCLUSIVELY to fill 2 key pos. Both req deg + Cobol on ANY HDWE + financial appl. Proj. Ldr. req's Life Cycle Sys. Design w/strong user interface. P/A must be ready to move into S/A role. Rapid career dvlpmt. prog. Contact J. Domenick. NY (212/947-4400).

MRP SYS. ANALYST. $35.000. Will function as proj. ldr. in new MRP installation project. Good communications skills essential. Large IBM shop w/IMS. Contact J. Buck. Charlotte (704/375-0600).

BANKING SYS. to $35.000. Immed. need for DP pros w/banking sys exp.—HOGAN, CPCS. Commercial Lending. Funds Mgmt., etc. Need Programmers. Sr. P/A & Team Ldrs. Contact L. Stone. Charlotte (704/375-0600).

Call us now or send your resume to our nearest office for immediate action on these and other fee-paid opportunities.

PHILADELPHIA, PA 19102—1500 Chestnut St
ATLANTA, GA 30346—47 Perimeter Center
BALTIMORE, MD 21204—409 Washington Ave
CHARLOTTE, NC 28281—1350 The Johnston Bldg
CLEVELAND, OH 44131—4401 Rockside Rd
HOUSTON, TX 77098—3000 Richmond Ave
McLEAN, VA 22102—1710 Goodridge Drive
NEW YORK, NY 10019—One Penn Plaza
ORANGE, CA 92668—505 City Parkway West
PITTSBURGH, PA 15222—4 Gateway Center
RALEIGH, NC 27625—3101 Poplarwood Court
SAN FRANCISCO, CA 94111—601 Montgomery St

fox·morris
personnel consultants

Data Processing in Paradise

The Most Exciting Software Development Projects of the Decade are taking place through Beamer Associates throughout Florida

For talented EDP professionals, this is the opportunity of the decade.

Beamer Associates, through its clients, has embarked on several new on-line software development projects throughout Western and Central Florida. (Other projects are available nationwide.) One project is destined to become the largest distributed network in the country. Another is a major new on-line applications project utilizing a 'state of the art' Data Base approach. Still another can put you on a team creating a dynamic new communications/networking project that will help to shape tomorrow's standards. Additional projects promise to reshape the D.P. approach in the BANKING INDUSTRY, worldwide.

There are significant career opportunities for experienced DP professionals in Applications, DataBase, Communications and Software. These projects encompass many different functional and skill areas. Therefore, we seek professionals with experience in ONE OR MORE OF THE FOLLOWING AREAS:

IMS...CICS...MODEL 204 DB...
FOCUS...COBOL...BAL...PL1...
3600 ASM...UNIX 'C'

- OS MVS SYSTEMS PROGRAMMING
- VTAM .IMS INTERNALS .Mass Storage
- VOICE/DATA COMMUNICATIONS SOFTWARE

Beamer Associates is the recruiting consulting component of a major national software services company. It also provides contract professionals to major corporations. We provide staff to Fortune 500 companies, major bank and insurance firms nationwide. This means opportunities for you nationwide.

Most positions offer above average compensation and relocation assistance plus on-going education and top benefits.

For immediate consideration or further information call or send your resume to:

Mr. David Reingold, Vice-President
800-223-2554 (in N.Y. State Call (212) 838-4441)

BEAMER ASSOCIATES
"Data Processing in Paradise" Project
747 Third Avenue, Dept. E, 15th Floor,
New York, New York 10017
An Equal Opportunity Employer M/F

BLUE CROSS AND BLUE SHIELD OF WYOMING

is recruiting for two new PROGRAMMER positions. The positions are required to meet the increased project workload of the organization.

Our Data Center features an IBM 4341L1, VM/CMS and DOS/VSE. We are enhancing our existing Remote Telecommunications Network, we have Office Systems software operational and are using the latest equipment, such as laser printers.

SYSTEMS PROGRAMMER - ENTRY LEVEL

Assist the current staff with vendor software installation and maintenance. Opportunity for a strong Assembler Programmer with several years experience. Computer Operations experience or support also desirable.

APPLICATIONS PROGRAMMER

Minimum of two years COBOL experience. Assembler experience a plus. Responsibilities include analysis and programming for new and existing systems.

Submit Resume to Director, D.P. Blue Cross and Blue Shield of Wyoming, P.O. Box 2266, Cheyenne, WY 82001 An Equal Opportunity Employer.

VICE PRESIDENT - DATA PROCESSING DIRECTOR

Imagine living in one of the most charming cities in the United States where quality of life is a number one priority ... that's San Antonio.

We are a three bank closely held holding company with over three hundred million dollars in assets, and are seeking a data processing professional who will report directly to Chief Executive Officer of Holding Company. Candidate will be responsible for guidance and direction of our Burroughs B-3800 System and Data Communications Network with a professional and operational staff of 23 employees. Incumbent should now be Director of similar size operation or number two person in a larger operation with previous banking or savings and loan experience. Experience on Burroughs equipment and Florida Software system is desired.

We are a progressive holding company and offer a competitive salary and benefits package. Resumes will be held in strictest confidence. Please send resume to:

Charles E. Cheever, Jr.
Chairman of the Board
Broadway Bancshares, Inc.
P.O. Box 17001
San Antonio, TX 78286

(No Agencies Please)

Equal Opportunity Employer

position announcements | position announcements | position announcements | position announcements | position announcements

Successor Planning
Executive Selection
Europe

Your management's decision on who will supervise your investment in Europe is essential to successfully marketing products and services here.

The input you receive from your people at country and European level will determine the quality and success of many of your strategies; the input your European employees receive from their local managers will determine their level of involvement in the future of your company.

It is almost impossible to over-emphasize the importance of finding the right person for a given position. Identifying management talent in Europe's high technology industries is our business.

Since 1969 we have assisted both American and European companies to staff almost 1000 key management functions with experienced, result oriented executives. Below are examples of:

Positions filled
Regional Vice President ● General Manager ● Controller ● Marketing/Sales/Product Managers ● F. & A. Manager ● Software Manager ● Systems Software Support ● Customer Engineering ● Branch Office Manager ● Advertising ● Personnel ● General Council ● Auditors ● Public Relations

High-tech. branches served
VLSI - Mainframers ● Plug Compatable ● MINIS ● MICROS ● Small Business Systems ● Printer/Word Processor Manufacturers ● Data Comm. ● Packsaged Software ● Systems Houses ● EDP & Management Consultants ● CPA Firms ● Time Sharing ● Computer Services ● Data Center ● EDP Users

If successor planning or staffing your European organisation requires professional attention please contact us for the lion's share of your staffing questions. Video interviews of canditates screened to your specifications as well as guarantees for the success of both the search and the selection process are a few of the many advantages you have with Dolan Consulting.

Representatives of our company will attend the NCC in Anaheim in May. Please arrange for on appointment now or call us when you are in Europe next.

DOLAN CONSULTING
Human Resource Management
Untermainkai 34 · 6000 Frankfurt/M. 1 · Telefon (6 11) 23 08 76
for the lion's share of staffing questions
Germany · Austria · Switzerland

COMPUTER PROGRAMMER
Minimum 2 years experience in applications programming using COBOL. Responsibilities for the development of new business applications as well as the maintenance of existing programs. Experience on an HP 3000 computer preferred but not required. Send resume and letter of application by 5/16/83 to:
Gary Dietz
Director of Computer Services
Whitman College
45 Boyer Avenue
Walla Walla, WA 99362
509-527-5415
Affirmative Action/EOE

MVS SYSTEMS PROGRAMMER
Cedars-Sinai Medical Center, the West's premiere medical center, seeks an experienced MVS Systems Programmer with in-depth knowledge of MVS/SP, JES2, CICS, ACF/VTAM/NCP, SMP4 and RACF. Must be capable of installation, tuning, and maintenance of MVS/SP and system components. Experience with operating system conversions and capacity analysis a definite plus. Salary is in the low to mid 40's, and supported by a superior benefits package including three weeks vacation the first year. Submit resume to:
Mr. John Gilbert, Employment
C S M C
8723 Alden Dr.
Los Angeles, Calif. 90048
(213) 855-5529

POSITIONS WANTED

JCL SPECIALIST
Salary: $21,941
Experience in a large scale IBM environment with moderate command of MVS/JCL, UTILITIES & ABEND resolution. Excellent benefits & career oppty. Exposure to VSAM, TSO/SPF and VCC desirable. Resumes accepted until May 20, 1983.
Send salary & resume to:
U.S. Postal Service
N.Y. Postal Data Center
Box 210, James A. Farley Bldg.
New York, N.Y. 10099-9010
attn: E & LR Branch

FIELD ENGINEERS
Hartford Technical Services is seeking Senior Level 303X, 370, and 4300 X-IBM FE's with openings in Chicago, L.A., Houston, Detroit and Ohio. H.T.S. is a maintenance company that offers substantial savings and service to its maintenance customers. Salary and benefits commensurate with your expertise. If you are seeking a future and have these skills call:
Gerry Darr
(312)364-0505
Hartford Technical Services, Inc.
515 East Golf Rd.
Arlington Heights, IL 60005

DATA BASE ADMINISTRATOR
UNIVAC 1100 experience required. Excellent salary and benefits. Call or send resume to:
Director, MIS
P.O. Box 23406
Tampa, FL 33630
(813) 879-7781

COMPUTER SCIENCE FACULTY POSITION beginning September 1983. Teach in growing Computer Science major program. Emphasis on applications in science, math, business and education. Four independent academic computer centers. Master's Degree in Computer Science required, doctorate preferred. Eastern College is a Christian College of Arts and Sciences and an equal opportunity employer. **Address inquires to Dr. Jean B. Kim, Academic Dean, St. Davids, PA 19087**

VAX Hack
DCL, VAX VMS System Services, RTL, RMS, ASSEMBLY, PASCAL, Language Compatibilities & Other Lore. Librarian, Documentation, I LOVE Interactive / "Un-Controlled Input" Problems.
New Machine?? Customized Utilities, etc. Other Prospects Welcome. EVERYTHING's Negotiable.
FRED MORRIS
5808 15'th NE#4
Seattle, WA. 98105
Messages, Mostly: (206) 524-3047
for HIRE

COMPUTERWORLD Classifieds

NCC 1983

NCC WRAP-UP ISSUE
May 23
Classified Deadline
May 13

YOU'VE GOT ONE MORE CHANCE! One more chance to be a part of the NCC excitement by advertising in COMPUTERWORLD's NCC WRAP-UP issue.

NCC is being held in Anaheim, California from May 16 - 19. And of course, COMPUTERWORLD will be right on top of it. And of course, YOU should be advertising with us if you want the best exposure a computer trade publication can give you.

Give us a little input, an ad for one of our many classifications including POSITION ANNOUNCEMENTS, BUY-SELL-SWAP, SOFTWARE FOR SALE, and TIME & SERVICES. We'll give you a LOT of output: exposure to well over a half million computer people AND some answers to your problems -- like getting high quality job applicants or finding buyers for your computer equipment.

Send us your classified ad -- camera-ready or one to be typeset by us at no extra charge. Our open line rate is $8.05 per line with a minimum ad size of 2 column inches (at a cost of $225.40).

NOW is the time to plan to get in on the NCC excitement. Send all materials to CLASSIFIED ADVERTISING, COMPUTERWORLD, 375 Cochituate Rd., Box 880, Framingham, MA 01701.

For more information, call 1-800-343-6474 (in Mass., call 879-0700).

* Remember our May 13 deadline!

BUY•SELL•SWAP

BUY
SELL • LEASE

DISK
3340 • 3344
3350 • 3380

TAPE
3411 • 3410
3420

Call Bob Ford
or Nelson Johnson

S/38
S/34
S/3
SERIES/1

Call Gayle Drotar
Roger Odom
Ken Winzen

370 Systems

4341 • 4331
3031 • 3032
3033 • 3081

Call Jack Harvey
or John Bottom

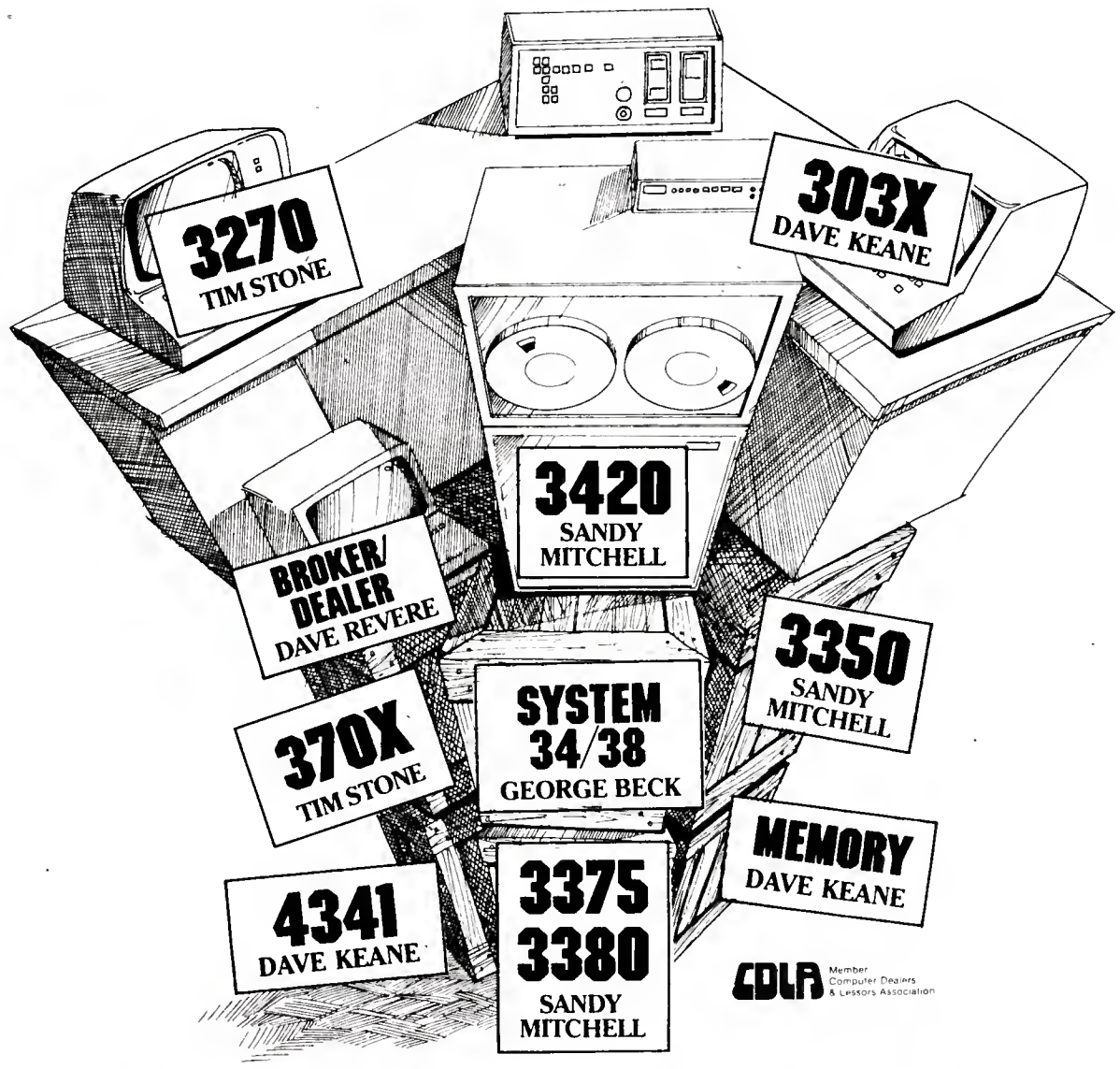
NEED TO REDUCE EXPENSES?

ECONOCOM'S PURCHASE-LEASEBACK PROGRAM CAN PRODUCE IMMEDIATE SAVINGS ON YOUR PRESENT EQUIPMENT—CALL FOR DETAILS.

ECONOCOM
845 Crossover Lane
P.O. Box 240297
Memphis, Tennessee 38124
901-767-9130
CDLA Member Computer Dealers & Lessors Association

Upgrading?
MEMORY
IBM & OEM
158, 168, 3031, 3033
Call:
Rohn or Bob Miller
(612) 884-3366 CDLA
Centron-DPL Company

THE HARDWAREHOUSE IS HARD TO BEAT FOR PRICE AND AVAILABILITY.



CALL US TODAY AT (602) 248-6848, PHOENIX, ARIZONA
OR CALL OUR LOCAL OFFICE IN YOUR AREA

Boston: Eastern Regional Headquarters (617) 272-8110
Washington, D.C. (703) 525-5233
New York (212) 832-2622
Philadelphia (215) 293-0546

San Francisco:
Western Regional Headquarters (415) 283-8980
Los Angeles (213) 670-7994
Denver (303) 534-7436
San Diego (714) 231-2361
Seattle (206) 447-1682
Phoenix (602) 248-5978
Portland (503) 228-7033
Salt Lake City (801) 298-4281

Chicago:
Central Regional Headquarters (312) 789-9100
Pittsburgh (412) 922-8920
Detroit (313) 995-8717

Austin:
Southern Regional Headquarters (512) 451-0121
Atlanta (404) 768-6535
Dallas (214) 233-1818
Houston (713) 629-4440

Canada: Toronto (416) 366-1513
Montreal (514) 281-1925

GREYHOUND COMPUTER CORPORATION
SUBSIDIARY OF THE GREYHOUND CORPORATION
800-528-6113

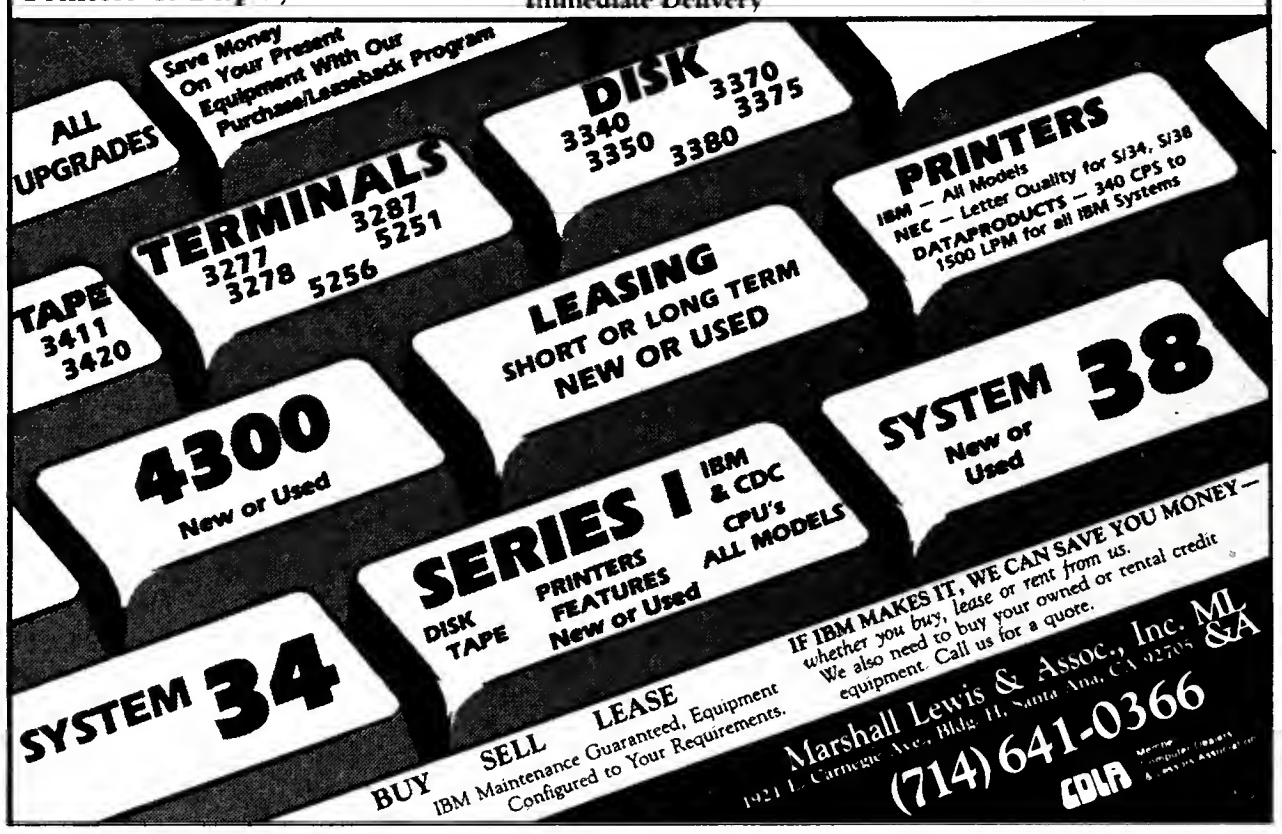
buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

SERIES I SPECIAL

Control Data
64, 126, 240MB
Removable Drives
Printers & Displays

New or Used
Immediate Delivery

IBM
4955F, 3101,
4978, 4963-64MB,
4975, Features



SALE PURCHASE

DATA GENERAL

6234 50MB Disk System
S/120 512KB
C/330
CS/30, CS/40, CS/50
MP100, MP200, 4207, 4221, 4225/27
D100, D200, D400, 5053 CRTs
6716 1MB C/150 Memory
8686 128KB S/140 Memory
Nova 4/C, 4/S, 4/X
4251 Comm. Chassis
ALM-16, ULM-5, SLM-2, DCU 200
AMI-8, ATI-16, 4062, DCU-50

6160 73MB Disk System
6161 147MB Disk System
6070 20MB Disk System
6045 10MB Disk System
6100/03 25MB Disk Systems
6098/99 12.5MB Disk Systems
6021 Mag Tape System
4327 300 LPM Printer
6125 Tape System
6101 Micro 12.5MB Disk System
6095 Micro 10MB Disk System
1144-B 2-Bay Cabinet

AMES SCIENCES, INC.
301/228-8100

3350 A2-B2
Want to Purchase
Please Call Carol:
CSU INDUSTRIES, Inc.
516-239-4310

WANG
800-526-0791
IN NEW JERSEY (201) 884-0920

BUY AND SELL: 2200T, VP, MVP, VS WORD PROCESSORS

STANDARD DATA EQUIP. INC. SDE LARGEST AND MOST ACTIVE IN THE USA

SYSTEMS • PERIPHERALS • PARTS

DG DEC

Phil Thomas
305-392-2006

Bryan Eustace
305-392-2005

Jennifer Eustace
305-392-2007 TELEX 568-670

BUY - SELL - TRADE - LEASE

THOMAS BUSINESS SYSTEMS, INC.

DATA GENERAL
New & Used Equipment

BUY. SELL. TRADE.

McINTYRE'S
Mini-Computer Sales Group Inc.

(313) 583-4100

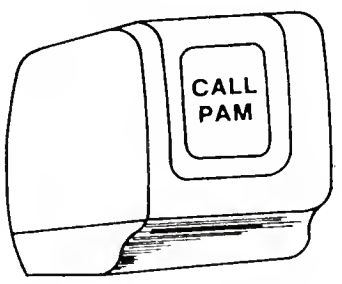
TLX: 810-232-4866
Answer Back: MCDATAGEN MAHS

32050 Edward Ave.
Madison Heights, MI
48071

* SCHERERS * SCHERERS * SCHERERS * SCHERERS *

TERMINALS
VT100's
VT101's
VT102's
LA12's
LA34's
LA36's
LA50's
LA100's
LA120's
LA180's
TI810's
TI820's
TI850's

ANNOUNCING
FOR ALL YOUR DEC ACCESSORIES & SUPPLIES



(614) 889-0810

SCHERERS
6145 SCHERERS PL.
DUBLIN, OH 43017

*SCHERERS*SCHERERS*

C.D. SMITH & ASSOCIATES, INC.
DEC computer systems & components
12605 East Freeway, Suite 318
Houston, Texas 77015
(713) 451-3112
TELEX 76-2547

DEC

WE ARE BUYING: VAX 11/750, 11/780, H7112-A, H9602-DF, RP06

WE ARE SELLING:

11/780-CP
MS780-DC
MS780-CC
FP780-AA
DW780-AA
H7100-A
H9602-HA
RH780-AA
MS750-CA
FP750-AA
RH750-AA

DEC 2060 SYSTEM

If you want on our Mailing List, call Valerie (713) 451-3112.

AMERICA'S LEADER IN BURROUGHS EQUIPMENT
NOW OFFERS
OVER $2,000,000
IN OWNED
BURROUGHS EQUIPMENT
FOR IMMEDIATE DELIVERY
B1800 - B7800
ALL MEMORY, DISK, TAPE,
MT's, TD's, PRINTERS
GUARANTEED BURROUGHS MAINTENANCE
602-264-5151
COLLECT
COMPUTER MARKETING CORPORATION
5651 NORTH SEVENTH STREET
PHOENIX, ARIZONA 85014
TLX 165-712
MEMBER COMPUTER DEALERS & LESSORS ASSOCIATION

DATA GENERAL SPECIALISTS FOR
Surplus New & Used Equipment & Systems
with full depot repair facilities.
CALL US
WE TAKE THE TIME.
- WE CARE -
JM Associates
601 W. Chapel Avenue
Cherry Hill, NJ 08002
609-663-1115

BUY, SELL, LEASE 5120
4300's/3 S/38, S/1 S/32 S/34
Call Collect: 404-252-7480
DATAMARC
6065 Roswell Rd.
Atlanta, GA 30328
All IBM Peripherals

RESULTS

Whether you're buying, selling, swapping, hiring or looking, you get results from Computerworld classifieds.

Maybe that's why Computerworld gets more classified advertising than all the other computer publications put together!

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

SYSTEMS
4341 4331
38 34
32 3

BUY • SELL • LEASE

COMPUTER
BROKERS, INC.
2978 SHELBY ST.
MEMPHIS, TENNESSEE

TOLL-FREE
800-238-6405
901-372-2622

PERIPHERALS
3203 3370
3340 3411
3350 3420

MEMBER AMERICAN SOCIETY OF COMPUTER DEALERS

COMDISCO®

Your First Choice In The Second Market

IBM PROCESSORS

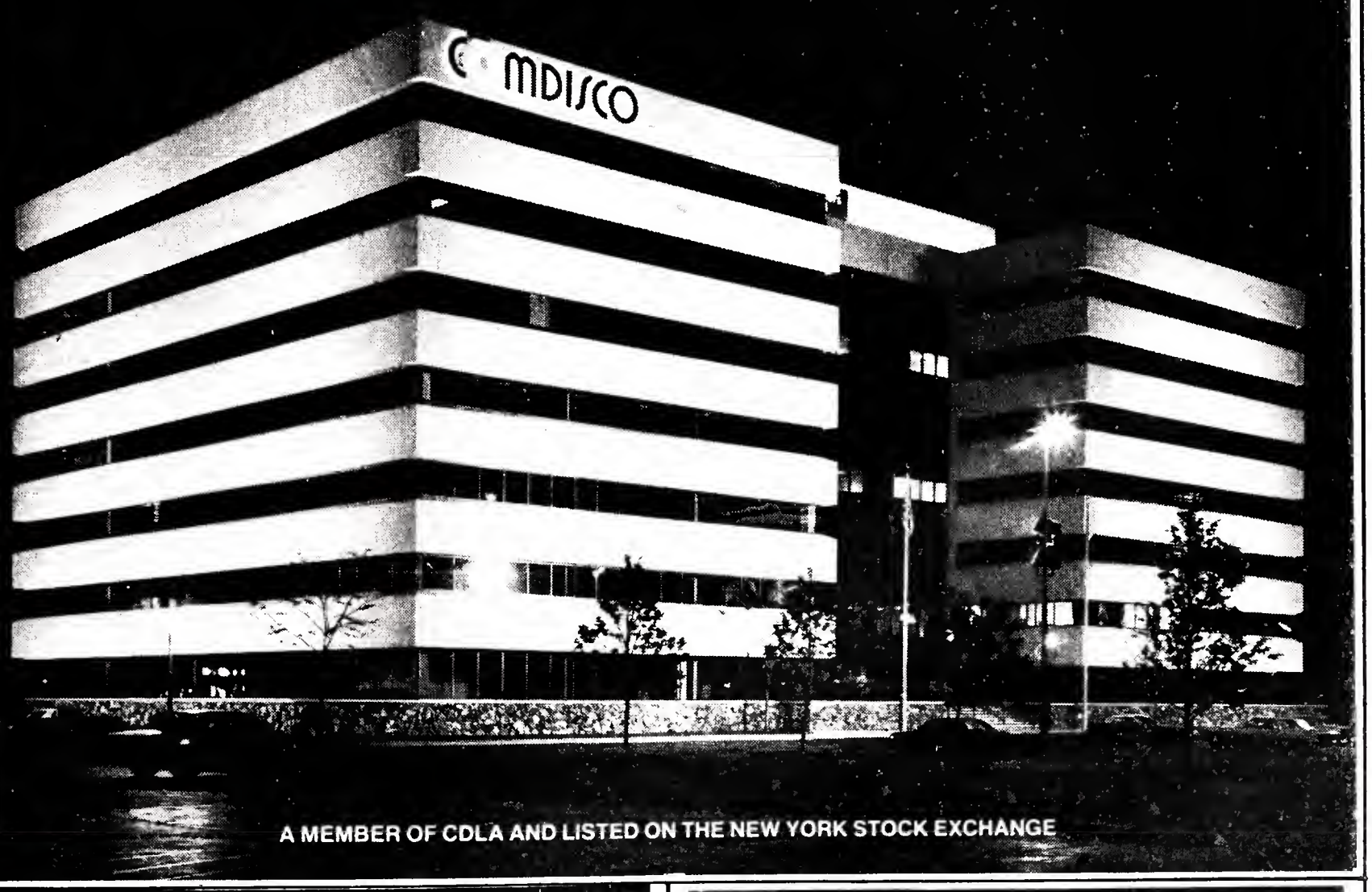
- ☐ 308X 36-60 Month Leases (ITC Lessor or Lessee)
- ☐ 3033 Available for lease or sale now
- ☐ 3032 Available for short term lease
- ☐ 3031 Available for lease or sale now (along with A/P's)
- ☐ 4341 We're Buyers, Sellers and Lessors of Group I's and II's
- ☐ 4331 Group II's available for lease or sale
- ☐ Memory/Channels available for 303X, 4300 and all 370's

IBM PERIPHERALS

- ☐ 3880/3830 Immediate Availability
- ☐ 3380/3375 Immediate Availability
- ☐ 3350/3370 Immediate Availability
- ☐ 3803/3420 Immediate Availability (All models)
- ☐ 3800 3704/3705 30-day Availability
- ☐ 3811/3211 Immediate Availability
- ☐ 327X We're Buyers, Sellers and Lessors

We Can Put It Together

Eastern Regional Headquarters
(Connecticut) 203/655-1211
New Jersey 201/568-9666
Washington, D C 301/441-1000
Philadelphia, PA 215/545-8035
Boston, MA 617/542-4005
Midwestern Regional Headquarters
(Chicago) 312/698-3000
Michigan 313/644-1500
Western Regional Headquarters
(San Francisco) 415/944-1111
South Central Regional Headquarters
(Dallas) 214/641-3255
Atlanta 404/256-5956
Florida 305/428-3177
Canadian Regional Headquarters
(Toronto) 416/968-7135
International Headquarters
(Chicago) 312/698-3000
Latin America 305/666-6258
Paris 01 524.5270
Switzerland ..... 41 (21)71.09 35
West Germany ..... (2434) 5048
Corporate Headquarters
6400 Shafer Court 312/698-3000
Rosemont, IL 60018 TWX 910-253-1233



A MEMBER OF CDLA AND LISTED ON THE NEW YORK STOCK EXCHANGE

WE BUY, SELL, LEASE, RENT, PURCHASE/ LEASEBACK.

LARGE INVENTORY
CPU's, CRT's, PRINTERS
SHORT OR LONG TERM LEASES
MONTHLY RENTALS

3741/3742

IBM SYSTEMS
34 & 38
Call BARRY TESSLER
KEN WARREN

Pearl Computer Division
Member of AMERICAN SOCIETY OF COMPUTER DEALERS
P.O. Box 24026
4717 Centennial Blvd.
Nashville, TN 37202
Nashville: (615) 383-8703
Houston: (713) 675-7551

We Buy & Sell
DEC
Systems
Components

Digital Computer Resale
call:713 445-0082
600 Kenrick Ste C22
Houston, Tx 77060

COMPUCOM

BUY-SELL-TRADE

PDP8 • PDP10 • PDP11
PDP15 • DEC20 • VAX
AND COMPONENTS

COMPUCOM INC.
3404 OAKCLIFF RD., C-4 ATLANTA, GEORGIA 30340
(404) 452-1090 / TWX 810-757-0202

3083-E16
4341-L11
4341-M12

WANTED
4341 Grp 1 or 2
For Outright Purchase
Or Purchase-Leaseback
Short or Long Term

Tape Drives
3420
3410 8809
Immediate Delivery

Controllers
3880 3830
3803
Immediate Delivery

Printers
3287 3289
3203 3211
3262 1403
Immediate Delivery

DASD
3380 3375 3370
3350 3344 3340
3330 3310
Immediate Delivery

Control Units
3274 3272
3276 3271
Immediate Delivery

Display Stations
3278 3277
Immediate Delivery

We Buy, Sell & Lease
IBM Processors and
Peripheral Equipment

CDLA

Contact Bernie Gest 215-782-1010
Computer Marketing Inc.
7704 Seminole Ave., Philadelphia PA 19126

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

IPS Computer Marketing Corp.

MACK CENTRE III 140 E. RIDGEWOOD AVE., PARAMUS, N.J. 07652

3380's 3880's Wanted Used	3350's Sale or Lease May	WANTED AP Unit for 3033 Purchase or Lease	4341 M2 Available May	4341 4331 Purchase/ Leaseback
Lease Plan Available for 3178's and 3274's	3880 3380 Purchase/ Leaseback	3375 3370 Sale or Lease Available May	Memory Available 3031 4341 4331 Call Frank Campagna	Memory Wanted 3033 4341 4331 Call Frank Campagna
INTERNATIONAL INQUIRIES INVITED Telex Frank N. Campagna	3203-5 3211/3811 Immediate Availability	3333-11 3340 A2 3344 B2 3344 B2F Immediate Availability	3420-3's 3704-A1 Immediately Available	3880-4 Available July 1 24 - Month Lease

TELEPHONE: (201) 262-9500 Telex: 642-197

WANTED DEC EQUIPMENT VAX And PDP-11

Systems - Components - Peripherals
New Or Used

Meadowlark Enterprises
Essex Street, P.O. Box 308
Middleton, MA 01949
(617) 777-4666

DIGITAL DEALERS ASSOCIATION

NEW USED

UNBEATABLE PRICES

T.I. Specialists*

ADDS
DEC
DIABLO
HAZELTINE
QUME
TELEVIDEO
TEXAS INSTRUMENTS

TO 50% DISCOUNT

THE COMPUTER BANK
315 Rte. 110, Hunt. Sta., New York 11746
(516) 549-5500
* Printers, Systems, Terminals, VDT's

BURROUGHS 6810
BURROUGHS 2930
BURROUGHS 1955
BURROUGHS 4800

2480 W. Alameda Ave.
Denver, Colorado 80223
(303) 922-8331
Telex: 910-931-0483

Member Computer Dealers & Lessors Association

DEC equipment at the lowest prices n-a-t-i-o-n-w-i-d-e!

Call toll free 800-328-7000
In Minnesota (612) 894-4020 • Telex 291084

MIDWEST SYSTEMS, INC.
12117 Riverwood Drive, Burnsville, Minnesota 55337

Call Us First or Call Us Last But Call Us For Sure!
BUY • SELL • LEASE

Processor	Peripherals	Banking Equipment
S/23	3741	1255
S/32	3742	1419
S/34	029/129	3600
S/38	5211	
5110	5251	
5114	5225	
5120	5256	
DATAMASTER	3262	

Southern Data Systems 800-251-2614
6616 Highway 100 Nashville, Tennessee 37205 or (615) 352-6565

FOR SALE HONEYWELL LEVEL 6 DPS 38 MOD 200

1 256K CPU
1 80MB DRIVE 67F/13R
2 MODEL 9614 FLOOR PRINTERS 160CPS
5 VIP 7200 CRTS

CONTACT JOHN MUNAFO
(201-843-9000 EXT 268)

Buy - Sell - Lease

S/32
S/34
S/38

IBM 3741 3742

CPU's CRT's PRINTERS
ALL MODELS

PURCHASE/LEASEBACK
SHORT & LONG TERM LEASES

Computer Marketing of America, Inc.
P.O. Box 90907
422 Acklen Park Drive
Nashville, Tennessee 37209

CMA

MEMBER AMERICAN SOCIETY OF COMPUTER DEALERS

Call: Dick Geyer

1-800-251-2670
In Tennessee: 615-297-7516

Inflation Fighters

Quality & Savings

Slightly used, Money Back Guarantee. Full Reels. All External Labels Removed Guaranteed for use at 800 BPI through 6250 BPI.

2400' Reel $4.95 ea.
1200' Reel $4.25 ea.
600' Reel $3.50 ea.

All Tapes with Hanging Seals

We pay freight on orders over 200 tapes.
All orders shipped within 48 hours.
Call or Write

Computer Tape Mart
44A Seabro Avenue
N. Amityville, New York 11701
[516] 842-8512

Buy/Sell/Lease SWITCHING
IBM 2914/3814
Locom LCM-500
T-bar 3915/3916
DataSwitch 1000
Beall BCS-3/BCS-5
Digital Industries 3403
Jack McAuliffe
4255 LBJ Freeway #210
Dallas, TX 75234
214-661-3981

BUY ..... SELL SWAP

Well-Equipped To Serve You In Buying or Selling:

HARDWARE SOFTWARE COMPUTER TIME & SERVICES

Over 500,000 computer people read **COMPUTERWORLD** every week. So, placing an advertisement with us is going to help you take care of your computer-related business...very quickly.

Deal us in on your business needs.

Call the Classified Department at 1-800-343-6474 or (in Massachusetts) (617) 879-0700 to place your ad.

IBM

• SERIES/1 AND PERIPHERALS •

4952	4955	4973	4966
4962	4963	4974	4978

• SYSTEMS/34 ALL MODELS •

5211	3262	5251	5256
5110	5120	5114	5103
3340	3344	3410	3411
3776	3777	3741	3742

SYSTEM/32
029 129

Want to Buy S/34's & Series 1's All Models

GEMINI COMPUTER CORPORATION

Gene Nicholl
Headquarters
214-934-9152
14229 Proton
Dallas, TX 75234

E. R. McDonald
West Coast Office
213-704-9725
4526 Saltillo
Woodland Hills, CA 91364

Coastal Computer Marketing

IBM Equipment

BUY SELL LEASE

Herb Levy
Al Sheldon
(800) 221-4069
(213) 986-4830

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

CMI

AMERICA'S LEADING SPECIALIST SERVING THE USED MARKET

REGIONAL MARKETING OFFICES

Atlanta, GA (404) 256-7942
Boston, MA (617) 367-5755
California (408) 773-1614
(415) 956-3183 (714) 752-8443
Chicago (312) 693-2790
Dallas, TX (214) 385-0806
Houston, TX (713) 780-7459
New Jersey (609) 645-7282
New York City (212) 349-0718
Tennessee (615) 449-6633
Washington, D.C. (703) 442-4941
Geneva, Switzerland Telex: 289950 WTCG
Montreal, Quebec (514) 871-1121
Paris, France Telex: 613910 CMI FR
Toronto, Ontario (416) 673-3081
Windsor, Ontario (519) 258-8910

CMI FINANCIAL SERVICES, INC.
755 W. Big Beaver, Troy, Mich. 48084
(313) 362-1000

CMI CORPORATION Since 1969
755 W. Big Beaver, 19th Floor, Troy, Michigan, 48084
TWX/TELEX: 810 232-1667 CMI CORP TRMI

(313) 362-1000

A Torchmark Company — Member CDLA

3033-U16
Fully Featured
Available Now
Lease or Sale

USED
3081-D's or K's
For Sale or Lease

3270

3033-N8
Fully Featured
Available Now
Lease or Sale

3081/3083
Lease Financing Available
For Your System or Ours
2, 3, 4 or 5 Year Terms

SYSTEM 34
SYSTEM 3
Dennis Pennington

3033
S to N N to U
Upgrades

Wanted
4341-M2
Call Now

3350 3880 3830
3340 3370 3330
3375 3380
Buy/Sell/Lease
Pat Callahan
Tim Ryan

3042
Attached Processor
Available Now
Short Term Lease

Wanted
4341-L01
Call Now

2914
3203 3505/3525
3800 3211/3811
Mary Drangin
3803/3420
Immediate Delivery

AMDAHL
V8 and V611
Available for
Sale or Lease

SYSTEM 38
Convert your IBM
S/38 Lease to a
CMI Leaseback
12-34-36 Month Terms
New/Used CPU's Avail.
Kevin Schaefer

Communications
IBM 3705
IBM 3704
Kathleen Austin

DEC DEC

DATA STAR INC.

INVENTORY CLEARANCE

★★★★★★★★★★★★★★★★★★★★

THIS WEEKS SPECIAL

Professional 350 — Now Only
Monitor, Keyboard
SMB Hard Disk (unused) — $7995 -

★★★★★★★★★★★★★★★★★★★★

MS750-CA	$5995	Kennedy 9000	$3995
DZ11-A	$2295	Kennedy 9100	$4995
DZ11-B	$1750	Kennedy 9300	$5495
VT-100	$1345	RL02	$2695
VT-102	$1295	TE16/TM02 FA	$9995

23461 RIDGE ROUTE SUITE #H, LAGUNA HILLS, CA 92653

714-859-7880

ABOVE EQUIPMENT CASH WITH ORDER

IBM
SYSTEM/34

S/3 • S/32 • S/38
5291 • 5251

3741 • 3742

BUY • SELL • LEASE
REFURBISHED • RECONFIGURATED
SHORT-TERM LEASES
PURCHASE/LEASEBACK

Tennecom MARKETING INCORPORATED
210 SPACE PARK NORTH
P.O. BOX 248
GOODLETTSVILLE (NASHVILLE)
TENNESSEE 37072

800-422-1004
IN TENNESSEE CALL: (615) 859-3872

BROOKVALE
RENT • SELL • UPGRADE • BUY

DEC

PDP 8, 11/03, 11/04, 11/23, 11/24, 11/34, 11/44, 11/45, 11/60, 11/70, VAX/750, VAX/780

SYSTEMS • OPTIONS • SUPPLIES

11/70	512Kb MOS, LA36 (new)	$48,500
11/23-BE	11/23 Plus, 512Kb MOS (new)	$5,995
VAX 730	System with license (new)	$29,850

Customized Configurations-Call With Your Request.

In Stock		Specials	In Stock	
BA11-KE (new)	$2,495		MSV11-DD (new)	$ 295
DD11-CK (new)	$ 375		RK05-FA (used)	$ 795
DD11-DK (new)	$ 575		RK07-PA (new)	$6,450
DMF32-AA (new)	$3,495		RM02-AA (new)	$11,450
DZ11-B (new)	$1,650		RM05-AA (new)	$24,850
LA34-AA (new)	$ 975		VT100-AA (new)	$1,450
MS750-CA (new)	$4,495		11/04-DC (new)	$2,850

BROOKVALE ASSOCIATES
40 ORVILLE DRIVE • BOHEMIA NEW YORK 11716

(800) 645-1167 • NEW YORK (516) 567-7777

DATA GENERAL

We Buy, Sell And Service
New And Surplus Systems and Peripherals
Call Or Write

Hanson Data Systems

(outside Mass. toll free) 1-800-225-9216
(within Mass.) (617) 481-3901
P. O. Box 27, Southboro, MA 01772

PRIME COMPUTER USERS

New 80 and 300 megabyte drives
Available for immediate delivery.
300/1440 LPM Printers
also available.
Nationwide CDC maintenance
and financing.

Call Barry Dacks
Timesharing Services Inc.
(904)396-7068

FORSYTHE McARTHUR ASSOCIATES, INC.

DEALER / LESSOR OF IBM
Computers and Peripherals

Home Office
Chicago
919 North Michigan Avenue
Chicago, Illinois 60611
312 943-3770

FOUNDED 1971

Branch Offices
Atlanta
404 953-9457
Dallas
214 934-9516

CDIR

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap



Cherchez les femmes

JUDY, MARILYN AND DEBBIE

WILL SAVE YOU MONEY
ON PRE-OWNED COMPUTER EQUIPMENT
CALL TODAY TO BUY, SELL, LEASE, TRADE!

214-258-0541

System/32s, 34s, 38s, 4300s,
3270s, 370s, all peripherals and I/O...much more!

METROPLEX COMPUTER COMPANY, INC.
320 Decker Drive • Suite 180 • Irving, TX 75062 TWX 910-860-9285

FOR SALE

Several
3101-12's
$685
Guaranteed / Refurbed
800-328-5718

END USER WANTS TO BUY IMMEDIATELY

VAX Computer System

(1) VAX 11/750 New or Used, 16k or 64k Chips, 1 MB Memory, Minimum of a DZ11A, RGM-80 or RUA 81, TS11-CA, LA120

(1) VAX 11/730 New or Used, RLO2/RA80 Configuration, TS11/CA, DMF32, LA120

Desired Peripherals and Software

(1) 600 LPM Printer, (5) VT100/101 CRT's, (4) 1200 Baud Modems, VMS and FORTRAN

Call: George Beebe
(215) 387-5300

MEMORY BOARDS

NEW COMPATIBLE WITH
DEC-DG HARRIS
AND MANY OTHERS

DISK PACKS
ANY MANUFACTURER
FULL DEPOT REPAIRS

DIGITAL DATA SYSTEMS, Inc.
1551 N.W. 65 Ave., Plantation, FL 33313
305-792-3290
1-800-327-8662
TELEX-232005 ATT DIG

FOR SALE
TGU-77
$16,000
TU-77
$8,000
(617) 777-4666

We have the IBM computer business down to a system.

BUY ■ LEASE ■ SELL

Systems
System 38 ■ System 34 ■ System 32
Series 1 ■ 5110/5120 ■ Others

Peripherals
including: CRTs ■ Printers ■ Disk & Tape Drives
Modems ■ Others

JALYN
COMPUTER SYSTEMS, INC.

Wash, DC: 5105-Q Backlick Road/Annandale, VA 22003/(703)642-1950
Denver: P.O. Box 3073 / Englewood, Colorado 80155

HP

1000
SERIES E,F,M

3000
SERIES II, III,
30, 33

7920
50 MB DISK DRIVE
7970E
1600 BPI TAPE DRIVE
2631B
180 CPS PRINTER
2622A
TERMINAL
& MUCH
MORE

encore
(213) 393-8268

WANG SYSTEM 5 Model 3
$7500
Contact
D. Stewart
(617) 262-4354

NEW PRODUCT for :
G A

GENERAL AUTOMATION COMPUTER USERS

SUNDRIVE Virtual Disc System, an alternative to mechanical disc drives. Provides GA computer users with 256K to 8M RAM plus 64K ROM. Allows very fast rolling and transaction moving. A must for multiple terminal systems and response poor operations. From 25 to 2400 times faster than conventional discs.

For information Write:
Automated Concepts Agency, Inc.
5944 Benjamin Rd.
Tampa, Florida 33614
or Phone: (813) 884-3474.

The Market Leader in current used **IBM**
BUY • SELL • LEASE

SERIES 1 and peripherals

XERXES
COMPUTER SALES
1614 Harmon Place, Suite 210, • Minneapolis, MN 55403
800-328-3884 / 612-339-3042

IBM
BUY SELL OR LEASE
IBM CRTs, Printers, Controllers
IBM 4331 & 4341 Processors
IBM 3350, 3370, & 3375 Disks
IBM 3411/10 & 3420 Tape Drives
WANTED
3890-B4 & B5 Document Processor
3211/3811 Printer System
3203-5 Printers
3276-2 & 3278-2 Display Stations
Magnuson M80/32 Processor
REFURBED/IBM MAINTENANCE
OCM, INC.
6604 W. 93rd St., Ste. A
Overland Park, KS 66212
(913) 381-2406

BUGS?

PROTECT YOUR IBM 3370 & 3375 DISK DRIVE FROM ACCIDENTAL SHUT-DOWN.

Our clear acrylic covers lock into the cabinet recess and cover the Drive Control.
For Immediate Delivery
Send $13.00 EA check or PO to:
Data Cover Enterprises
3657 Hidale
Lake Orion, MI 48035
Call: (313) 362-3389 For Info

→ NCR USERS
Are You Thinking of Trading Up ↑ ? or Down ↓ ?
Call Us for a Quote
SMITH/ANDERSON CORP.
619-340-6688
Authorized NCR Systems
Distributor - Nationwide
(New or Used Systems)
71-866 Highway 111
Rancho Mirage, Calif. 92270

Hardware, software, problems, people, pricing, ethics, litigation, communication, macros, minis and micros.

We like to make an issue of it. EVERY WEEK.

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
375 Cochituate Road, Framingham, MA 01701/(617) 879-0700

BUY ■ SELL ■ LEASE
PURCHASE / LEASEBACK
All IBM Equipment
Call FREE 1 - 800 - 527-6438
FRONTIER®
COMPUTER CORPORATION
4575 S. Westmoreland • Dallas, Texas 75237
214 - 330-7243
CDLR
MEMBER AMERICAN SOCIETY OF COMPUTER DEALERS

SYSTEMS BUY/SELL PERIPHERALS

WANG
DATA & WORD PROCESSING
2200 series, VS, WP, OIS
CPU's, CRT's, disk/tape drives, printers, MEMORY UPGRADES.

MAGNETIC MEDIA
Disk packs, diskettes, tapes, rbbns, print wheels, stk. forms.

PLUG COMPATIBLES
(NATIONAL OEM's)
CDC-Disk Drives
MVP, LVP, LVPC: 2280-1,2,3
VS: 2280V-1,2,3; 2265V-1,2,3
OIS: 6580-1,2,3; 6565
Data Products Printers
MVP, LVP, LVPC: 2273-1, 2273-2

ERST International (212) 431-1100

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

**** DEC ****

BUY—SELL—LEASE—TRADE—CONSIGN

— SYSTEMS —

11/44, Dual RM02, TS11, DZ11E
11/34A, Dual RL01, LA36, RSX11M
11/70, Dual RP06, TWE16, FP11C, RSTS
11/750, RA80, TU77, LA120, VMS
11/780, RM05, RP07, TEU77, VMS
11/34A, Dual RK06, TJU16, RSX11M
11/70, Dual RM03, TWE16, LA120 50 HZ

— CPU'S — DISK-TAPE-MEMORY —

Call for Quotation

— OPTIONS —

FP11 (All Types), FP750, FP780
DMC (All Types), DMR11-AC
DT03, PCL11-A, DH11, DZ11
PC11, DJ11, DQ11, DV11, DU11
DUP11, DR11, KK11, RH11, LP11
TM03, KW11P, KW11W, KG11
RH780, MM11YP
MK11 Chassis, w/BBU

SPARE FOR ANY DEC UNIT
CALL FOR QUOTE

NATIONAL COMPUTER EXCHANGE

800-854-7224

6980 Aragon Circle, Suite 5 • Buena Park, CA 90620

(In Calif.)714-522-1870 TWX:910-596-1499

$mart idea. IBM products at a Dataserv price.

Dataserv can deliver more IBM equipment at lower prices and lower lease rates

Guaranteed.

Companies of every size are saving thousands, yes, even hundreds of thousands of dollars on their IBM equipment. How? By leasing and/or buying from Dataserv.

We're world-wide and we're stronger than ever and working harder than ever to *earn* your business. We specialize in new and used IBM computers — **Sys/34's, 38's, 4331, 4341, 3033, 3081, 3083 and all IBM peripherals.**

For immediate details on all the Purchase, Lease and Purchase/Lease Back plans offered by Dataserv call our toll free number.



"We made a decision several years ago to do business with Dataserv. Since then Dataserv has provided us with more than two million dollars worth of equipment. We have enjoyed excellent savings with every single transaction. Dataserv is a remarkable company and a good source for us."

Robert M. Horton, Sr. Vice President
Trusco Data Systems, a division of
The Trust Company of Georgia
Atlanta, Georgia



dataserv
509 Second Ave. So. Hopkins, MN 55343
TOLL FREE 800/328·6729
In Minnesota call collect 612/933·2575

Lease • Sale • Purchase • Maintenance
Saving you money on your IBM investment

ALL IBM COMPUTERS ARE CREATED EQUAL BUT, ALL IBM BROKERS ARE NOT!! CALL US

INTERSTATE COMPUTER EXCHANGE

EXPERTS IN **IBM**
BUY • SELL • 72 HOUR UPGRADES

S/34

IMMEDIATE DELIVERY
ALL PERIPHERALS AND FEATURES
25% TO 35% OFF LIST

S/32 • S/38 • SERIES I • ALL IBM EQUIP.
NEW S/23 — LARGE DISCOUNT!!

GUARANTEED !!
IBM MAINTENANCE • DELIVERY DATES

WANTED: ALL DATAPOINT EQUIPMENT AND S/38's

WANTED —
- ALL S/34 CONFIGURATIONS
- ALL S/34 & S/38 PERIPHERALS
- ALL LEASED & OWNED MACHINES

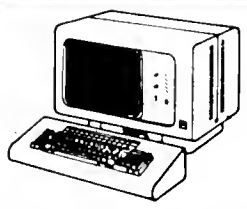
BUYING OR SELLING EQUIPMENT

WE WILL LIST YOUR EQUIPMENT ON A COMPUTERIZED READOUT. IN MINUTES ALMOST EVERY BROKER AND DEALER IN THE COUNTRY WILL BE INFORMED OF YOUR PENDING SALE OR PURCHASE OF EQUIPMENT.

7578 TRADE STREET, SAN DIEGO, CA. 92121 | CALL COLLECT | PAUL CAYTON (619) 578-5410

BUY-SELL-LEASE IBM SYS/34

- IMMEDIATE DELIVERY
- GUARANTEED M/A
- SHORT TERM RENTALS
- PERIPHERALS
- FEATURES-UPGRADES



MARION
84 KENNEDY STREET
HACKENSACK, N. J. 07602

(1-800) 631-1914
(201) 343-4554
(203) 758-2409

RCM
214/385-0354

BUY-SELL LEASE
- All IBM Systems
- Peripherals
- Tapes
- Disks

SERIES/1
- Systems
- Features
- Peripherals
- New systems available at substantial discounts

IBM P.C.
- Lease program for IBM personal computers

PIONEER COMPUTER MARKETING
4835 LBJ Frwy. Suite 680
Dallas, Texas 75234
214/385-0354

*SCHERERS*SCHERERS*

1000 MODEMS PLUS 1000 TERMINALS

DEC TERMINALS			TI PRINTERS	
LA50's	LA34's	VT100's	VT103's	810's
LA100's	LA36's	VT101's	VT131's	820's
LA120's	LA180's	VT102's	VT25's	850's

DF03-AA $495.00 — **DURING MAY & JUNE** — VA212LC $495.00

*WHEN YOU BUY A NEW OR USED TERMINAL OR PRINTER AT

SCHERERS LOW LOW LOW PRICES

you can then buy a Brand New 300/1200 Baud Bell Compatible 103/212A Originate—Auto Answer Modem for

$495.00 each

YOU DECIDE
Which Terminal & Which Modem
DEC DF03-AA — *495.00
OR
VADIC 212 LC — *$495.00

FOR MORE DETAILS CALL:

SCHERERS
6145 Scherers Place
Dublin, OH 43017
(614) 889-0810

SPECIALISTS IN:
DEC EQUIPMENT
TI PRINTERS

*SCHERERS*SCHERERS*

buy sell swap | buy sell swap | buy sell swap | buy sell swap | buy sell swap

IBM For Less.

Lease Financing

- New IBM Equipment
- Purchase/Leasebacks of Installed Systems

Equipment

- IBM 4300's
- System 34's
- Systems 38's
- Peripherals



TexCom™
• Equipment Leasing Services

San Antonio
512/690-9826

Please Call For A Proposal

IBM

3270

PRINTERS, TERMINALS & CONTROLLERS

Please Call: (312) 943-3770

Forsythe/McArthur Associates Inc.
919 North Michigan Avenue
Chicago, Illinois 60611

DEC AND COMPATIBLES

(714) 859-5190

MICROLAW 23615 X El Toro Road #368 El Toro, CA 92630

IBM UNIT RECORD EQUIPMENT & DISK DRIVES
DISK PACKS, DATA MODULES, MAG. TAPE, DISKETTES








SALE OR LEASE

machines

026—029—082— 083— 084
085—087—088— 129— 514
519—548—557—3330—3340

disk packs

2316—3336(1)—3336(11)—3348(70)
5 MEG. TO 300 MEG. PACKS—NEW & USED
Highest Prices Paid for Used Packs & Machines

THOMAS COMPUTER CORPORATION
5633 W. Howard St. Chicago, IL 60648
800-621-3906 312-647-0880
Authorized Distributor—Memorex, CDC, 3M, BASF, Verbatim

S/38 S/34 Series 1 System 3-32

Buy... Sell... Lease...

- Immediate availability
- 5224 & 5291 • Upgrades
- Short term leases • Trade-ins
- Guaranteed IBM maintenance

The Datacomp Leasing & Service Group, Inc.

1-800-323-3289

Chicago 312/448-4300 New Jersey 201/467-8686

Up to 50% Savings...

On Features/Installation/Discontinuance/Relocation

- IBM
- STC
- CONTROL DATA
- INTEL
- MEMOREX
- NSC

Guaranteed Maintenance Certification

- CABLES in Stock
- Most Features In Stock
- Equipment Refurbishment

Special discounts available on 3031, 3032 and 3033 features and installations. This offer expires May 31, 1983. So call TODAY!



More than a financial alternative...
A better business decision
For more information call collect (312) 543-2667.
WORLD COMPUTER WORKS, INC.
502 Winthrop Addison, Il. 60101

BUSINESS OPPORTUNITIES



AUSTRALIA

LIONEL SINGER, Australia's leading computer marketeer will be at the N.C.C. in Anaheim from May 15th through May 19th and can be contacted at the Anaheim Motor Lodge (714) 879 6440. Should you wish to discuss your product with him please call.



BIDS & PROPOSALS

NOTICE TO PROPOSERS

The Florida Public Service Commission will soon issue a Request for Proposals (RFP) to provide a Case Management System, including a document control capability, which can store, retrieve and edit comprehensive events and other data about each case, in real time, via CRT terminals interacting on-line with a central data base. The system should be user-oriented and operable on a main frame or micro-computer. The successful proposer will be one who can demonstrate a suitable system in being and now operating.

Copies of the RFP may be obtained by writing to Ms. Margaret Perry, Information Processing Administrator, Florida Public Service Commission, 101 East Gaines St., Tallahassee, FL 32301-8153.

COMPUTERWORLD CLASSIFIEDS WORK!

- POSITION ANNOUNCEMENTS
- BUY SELL SWAP
- SOFTWARE
- SOFTWARE WANTED
- TIME & SERVICES
- REAL ESTATE
- BUSINESS OPPORTUNITIES
- SEMINARS/CONFERENCES
- BIDS AND PROPOSALS

It's easy to advertise in COMPUTERWORLD. If you don't have an advertising agency to supply us with copy, layout and order, or camera ready mechanical, stat or film negative of your ad, just call one of our ad-takers at 1-800-343-6474. They will be glad to take your ad and typeset it in available fonts at no extra charge. If you have lengthy ads that require logos and artwork, just send a clean typewritten copy of your ad to the classified advertising department at COMPUTERWORLD (telecopier service is available); note the ad size you want; and, if you want your company logo to appear in your ad, please be sure to include a camera-ready copy with you insertion order. You should also supply any special borders, headlines and artwork that you want in your ad. Our Art Department will follow your suggested layout as closely as possible if you wish to send one.

Ad closing is every Friday, 6 working days prior to issue date.

Rates: Open rate is $112.70 per column inch. Columns are 2" wide. Minimum ad size is 2 column inches (1 column wide by 2 inches deep), and costs $225.40 per insertion. Additional space is available in half inch increments. Some sample sizes and costs are shown.

1 col X 4" -$450.80
2 cols X 4" -$901.60
2 cols X 5" -$1127.00
2 cols X 8" -$1803.20

Discounts are available when you run more than 35 column inches of advertising in a year anywhere in Computerworld. Box Numbers are available, $15 per insertion.

To reserve space for your ad, or if you'd like more information on Classified advertising in COMPUTERWORLD, call our office nearest you.

Boston - (617)879-0700
New York - (201)967-1350
Chicago - (312)827-4433
San Francisco - (415)421-7330
Los Angeles - (714)556-6480

TELECOPIER SERVICE - (617) 879-0700

William J. Mills, Manager Classified Advertising

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
375 Cochituate Road, Box 880, Framingham, MA 01701/(617) 879-0700

The Bulletin Board

Buy • Sell • Lease Buy • Sell • Lease Buy • Sell • Lease Buy • Sell • Lease

BASIC FOUR

/BUY/ /SELL/ /LEASE/ /TRADE/

BASIC FOUR

- Complete and/or partial Systems...
- Peripherals; B/4 and Non-B/4.....
- SPEED and interface Consulting....

Sorbus Service is Guaranteed

//UIPS/Second Source System//
(209)473-4156 (408)971-8118

BUY SELL TRADE

BASIC 4
Systems,Peripherals, or Components
Sorbus Guaranteed
ALETA ENTERPRISES INC.
28 Esplanade, Irvine, Ca 92715
(714)552-3559

WANG

BUY-SELL
2200 OIS VS
Systems In Inventory
VS/100 VS/80
LVP
OIS/140 OIS/130A
And Peripherals
GEM
(602) 277-8230

WANG USERS!!!

2256-C	$4,200
80 Meg"Phoenix's"	$8,800
75 Meg Disk Module Drives	$4,800
288 Meg Module Drives (New)	$13,100

New & Refurbished Drives
(617) 372-8536
Dwight Kranz

WANG

ISN'T IT TIME YOU MANUFACTURED YOUR SOFTWARE?

VS COBOL
COMPUTER AIDED PROGRAMMING

CAP Speeds Development
CAP Improves Control
CAP Reduces Maintenance
CAP Enforces Standards

NETRON INC.
99 St. Regis Crescent North
Downsview Toronto, Canada M3J1Y9
(416)636-8333

BURROUGHS

BUY SELL LEASE
All Systems & Peripherals
AVAILABLE
- B1855 Sys • B1955 Sys
- B90s • B900s

(Configured To Your Specs.)
SPECIAL: B1955 MEMORY
- SRI Terminals
- TD830s, MT983s, MT985s
- 206 & 207 Style Disk Drives
- Various Tape Sub-systems
- Memory Upgrades
- Printers 9246 & 9249 Styles

Guaranteed Burroughs Maint.
Depot Maintenance Available
COMPUTER PROVISIONS
(216) 292-3774
(*Member IBDA*)

BURROUGHS

BUY • SELL • LEASE
B1700 • B1800 • B1900
(Custom Config. Install. Avail.)
B20 through B7800
206/207/225/235 Disk
B9246/47/49 Printers
Mag Tape Subsytems
TD830 • MT983 • SRI • Datamaxx
TU/DC/CP/TT Terminals
Installation & DEPOT M/A Available
UFP Corp. **(312) 279-1160**

DATA GENERAL

DG 6026 S/S NEW	$11,499
1144-B NEW (2-Bay)	$1,199
DG 73MB S/S NEW	$13,000
DG MCA #4206 w/cable	$950
Nova 4C RTC 64KB	$1,500
6021 New	$5,500
LP2 printer 6087	$1,450
6070 S/S, A/O	From $3,500

CALL FOR UNLISTED EQUIPMENT
SYSGEN DATA Ltd. **(516)496-7777**

BUY - SELL - TRADE
New and Used D.G.
CPU'S, PERIPHERALS, DISKS
MEMORY
Datatrend Inc.
(617) 233-9318 (800) 343-3616

MEMORY
For MV/8000
or MV/6000
(4) 8703 512Kb Boards
$2,500 per Bd
Contact: C. Brown
(617) 451-3480

DATA GENERAL

M600 SYSTEM: Includes 1.5 MB, 3-bay cabinet, (3) 6060 96MB disks, 6026 tape drive, DCU200, comm. chassis, ALM-16, ALM-8.
MV/8000 SYSTEM: Incl. 2MB AMI-8, ATI-16, 6026 mag tape,& 6061.

MISCELLANEOUS EQUIPMENT

8703 512KB MV/8000 Memory	$3,600
8656 256KB Eclipse Memory	$3,650
8387 256KB Nova 4 Memory	$2,900
8687 256KB S140 Memory	$2,900
6027 9-Track Subsystem	$5,800
6040 Dasher TP1 Printer	$900
6089 LP2 Printer	$1,500
6053 D2 CRT	$1,300
6108 D200 CRT (New)	$1,400
6061 192MB Disk Subsystem	$17,500
6061A 192MB Disk Add-on	$15,000
6061H 192MB Disk s/s	$18,500
6060 96MB Disk Subsystem	$13,000
6060A 96MB Disk Add-On	$10,500
8642 Burst Mux	$1,700
4357 IAC 16 or 24 line	CALL
4251 Comm. Chassis	$900
4215 600 LPM Printer	$5,800
4218 300 LPM Printer	$4,800
6060/6061 Zebra Adaptor	$3,500
(15) 6061 Disk Packs	OFFER
(150) 1200 Ft. Mag Tapes	OFFER

We Buy/Sell All Makes Of Computers
Intl. Computing Systems
P.O. Box 343, Hopkins, MN 55343
(612)941-2941

WE SELL, BUY, TRADE
D.G. Computers
Call the office nearest you for free brochure or quote
International Computer Remarketing, Inc.

TEXAS	(214)-780-1600
ILLINOIS	(217)-351-7982
CALIFORNIA	(408)-554-8717

DISK DRIVES AND PACKS

CDC DISK

ALL MODELS IN STOCK SALE

Nationwide Installation
Maintenance/Full Warranty
Choice of 50 or 60 Hertz
$AVE • $AVE • $AVE
Call 214-262-8201
DIMENSION SYSTEMS

IBM

For Sale
1419 MICR
Call Dick Boyce
(813) 722-4534

158-U36
ISC, Madrids
Avail. Immediately
GTEX (214) 783-1212

AVAILABLE
3033U8 PROCESSOR
Will configure to your specifications
Available until 5/1/83
Flexible Terms
LEASING DYNAMICS, INC.
1717 E. 9th St., Cleveland, OH 44114
Call Bob Kendall (216)687-0100

FOR SALE
SYSTEM 34
64 Meg, 64K, 5340 CPU, 5211 Printer Model 2, (3) 5251 CRT's, (5) 6265 Model A52 Cash Registers.
Call Pat Wolfenbarger
(703) 631-2300

IBM

4341-L1
Short term lease
GTEX
(214) 783-1212

FOR SALE
USED CONSUMER FINANCE BUFFERED TERMINALS
1980 Model 9 Printers
7441 TCUs
247 Pair at $75.00 each
Call Jim Wilcox
(800) 345-6105 Ext 310
PA Only (800) 362-5226

FOR LEASE ONLY
NEGOTIABLE AVAIL. NOW
(2) 4952A00 Series I with 6306, 2090, 2074 (2), 3581, 4540, 5650, 2057 (3)
(2) 4964-1 Diskette
(1) Alanthus C80 3271-ASCII Protocol Conv; Works Great
Almost New: Take all or any item
CALL REBA AT (404) 451-2331

5320-A23 ..... $3,500
5340-C23 ..... $29,800
5211-2 - 300 LPM Printer
5251-11 & 4600 CRT (2)
Jack Collins
800-328-5718

WANTED
4331
K2 or L2
Call Bill Hegan
Computer Merchants, Inc.
914-238-9631

FOR LEASE
3310
A2 & B2
Flexible Terms
Call Bill Hegan
Computer Merchants, Inc.
914-238-9631

FOR SALE
5285
C05
w/1150, 2500, 3505, 3701, 4601, 5801
Call Ron Gibb
914-238-9631

BUY..SELL..LEASE
CRT's & Printers
5291's, 5224's, 5225's
Available immediately with complete IBM systems. Call regarding our flexible lease plans.
CERES CAPITAL CORP.
(212)279-4467
(713)627-7724

158-AP6
w/1433, 1435, 1850, 4990
For Sale Avail. Now
S/34 Avail.
w/Upgrades
Vargo Companies
313-254-2850

FOR SALE
IBM S/38 - 364
1501 - Datacomm Attachment
2001 - Datacomm Controller
3200 - Line Base For Datacomm
3701 - ETA Interface For Modems
Call George Smith
(608) 785-1000

FOR SALE
DECISION DATA PRINTER
Marc Ashton
DATA 3 COMPUTER CORP.
(612)941-9495
(800)328-7938

IBM 5280
Up to 50% Off
Selling Entire Hardware Inventory
Various Configurations
Call: Fred Tuomi
Johnstown American Systems, Inc.
404-256-5460

IBM

IBM 3278-2
DISPLAY STATIONS
For Sale
Immediate Delivery
Quantity Orders
4621,4622,4627
Keyboards
New York Systems Exchange, Inc.
(516) 673-3830

FOR SALE
17 3279-AO2 CRT's
Twinax & Coax Cable
Call Jeff Baker
(703) 369-8000
Extension 432

FOR SALE OR LEASE
Complete System 3 with Communication Displays/3741's-42's/1403-N1/3340/44/tapes
Coastal Computers
(617) 526-4301

SYSTEMS 34/38
Lease or Sale
WANT TO BUY S/34's
(FOR INVENTORY)
Models & Peripherals
WE PAY CASH
LEAS PAK INTERNATIONAL
Tel.(817)268-0023

FOR SALE
IBM SYSTEM 7
48K 5012 Multifunction Module
5022 Disk
Peripherals
Call: Doug Magill
(216) 248-3600

ISN'T IT TIME YOU CONVERTED TO THE WANG VS?
RPG-II, COBOL, OCL
TOTAL CONVERSION
NETRON INC.
99 St. Regis Crescent North
Downsview Toronto Canada M3J1Y9
(416)636-8333

SYSTEM 34
BUY SELL LEASE
Peripherals - Features
Disk & Memory Upgrades
Call Carolynn Koucky
American Computer Exchange
(216)247-2100

SYSTEM 3
SALE OR LEASE
15D26 512K, LDA30 ports, BSCC1, BSCA 3277 Console, (28) 3277 MOD2-4633 Kybds., 3340 AO2 Disk, 3344 BO2 Disk, 5421 MOD-1 Print cntrlr., 1403 N1 Ptr., 1100 LPM 3741 reader.
Principals Only
Call Dennis Braun **(216)696-7272**

3800-1
WANTED
CALL BOB
800-433-4148
213-372-8845 (in CA)

More Bulletin Board on the next page.

ORDER FORM

COMPUTERWORLD BULLETIN BOARD

Issue Date: Ads can be accepted up until the Monday preceding the issue desired. **Computerworld** comes out every Monday.

Classifications: Most ads will be classified according to the brand of equipment that is being bought or sold. These classifications include Burroughs, Data General, Digital/DEC, Hewlett Packard, Honeywell, IBM, NCR, Sperry Univac, Salvage, Terminals, Misc. Systems and Miscellaneous.

Copy: Copy sent in via the mail or telecopier (telecopier extensions are 410 and 451) should be cleanly typewritten. Ads may be given over the phone to our team of ad takers. The standard size is 1 column by 1 inch deep. These units may be combined to form larger sized ads. Describe the equipment very briefly, give the price and the name of the person to contact. All ads will be set up using a standard format. No borders or logos are allowed.

Cost: The price for each standard unit is $115.00 (One unit minimum and no fractional units allowed.) There are no agency commisions and no quantity discounts.

Billing: Once you've written your ad, send (or call) it in with your name and address for billing purposes and we'll run it. (If your company has never advertised with us before, we request a check with your order.)

Date(s): _____

Signature: _____

Name: _____

Title: _____

Company: _____

Address: _____

Telephone: _____

Send this form to:

COMPUTERWORLD BULLETIN BOARD

375 Cochituate Road, Box 880, Framingham, MA 01701

617-879-0700 **800-343-6474**

The Bulletin Board

CONTROL DATA

FOR SALE
CDC MOD. 17/18A SYSTEM
Includes: CPU, (8) 1782 storage mod, 1750 digital subsys, (2) 856 disk drives, (2) 616 tape drives, 1733 disk cntrlr, 1732 tape cntrlr, 1729 card reader, 713 CRT, (4) 848 disk packs. All manuals-/cables incl.
CALL 619-571-6788
P.O. Box 17792 S. Diego 92117

DEC

FOR SALE

VAX 11/780	2 Mb memory
TU78	1600/6250 BPI Tape Drive
RMOS	256 Mb Disc
RP07	512 Mb Disc
LP-11-DA	6601 lpm printer; 132 columns
10 LA180	Printing Terminals

Available Software, License Only:
FMS, DBMS, DATATRIEVE, CDD, VAX-11, COBOL
Price-Negotiable-
Will take 11/750 as trade-in
Call (213) 340-4041 or in California (800) 942-8403

DEC "RAINBOW"
192K MEMORY EXTENSION
$599
Interchangable with DEC PC1XX-AB
1 year warranty; heat cycled
INTERMEDIA SYSTEMS
(408) 996-0900

DEC

DEC SPECIALS
- (1) 11/70 w/1/2MB MOS, Dual H960 Cab
- RK07 Unused, $4,500
- FP780-AA, Call
- TGU77-AB, Call
- DMR11-AD, Call
- BA11-KE New, Call

SEVCO INC. (617) 435-6938

Call For Your DEC Needs

861-D	$750	BA11-KE	$1,650
DD11-CF	$100	DL11-W	$425
DZ11-A	$2,195	H754	$295
RH780	$5,995	RKV11	$595
RPO6-BA	$16,500	TU45-KE	$3,995

Pacific Computer Sales, Inc.
(408) PDP-1170
Telex 172337

BUY • SELL • TRADE

1105-SC	$1795	PC11	$1295
CR11	$1295	RH11-AB	$2995
DL11-E	$ 295	RK07K-DC	$ 195
FP11-C	$3995	RK07-PA	$3995
LP11-VA	$2950	RM03-AA	$6950
MS11-LB	$ 950	RM80-C	$1495

NEW YORK COMPUTER EXCHANGE
(516)752-8666 (800)645-9109

FOR SALE: DISK PACKS
BRAEGEN PERIPHERALS
- DSC302-6 (Century T-302RM) disk drive w/Emulex SC70/B2 cntrlr, (4) disk packs.
- (2) Disk packs for RPO6 disk drive.

Call Keith Carlson
816-361-4194

DEC SYSTEMS
11/03 systems w/RL01 disk, LA180 printer., 64KB memory, RT-11 license $4,500
Complete packaged 11/23 systems with dual RL02 $12,500
LA180 ptrs. w/interface & cntrlr. $500
Other Configurations CALL
E.E.C. Systems Inc.
(617)443-5106

DEC

DEC 11/70 - VE
(2) RM03 TWE 16
H960 - DH, RSTS
$59,500
LAKEWOOD COMPUTER CORP.
3260-9 Keller St.
Santa Clara, CA 95050
(408)266-2545

MISC. SYSTEMS

XEROX 860
1 1/2 Years Old
Excellent Condition
$3,000 Under Market
(714) 531-6769

HONEYWELL

LEVEL 6 & DPS 6 EQUIPMENT
NEW & REFURBISHED
Systems • Peripherals • Memory
CRT's • Applications Software
SUBSTANTIAL DISCOUNTS!!
Boudreau Computer Services Ltd.
100 Bearfoot Rd.
Northboro, MA 01532
(617)393-6839
TWX 710-347-7574

HONEYWELL

LEVEL 6 & DPS 6
Parts or Complete Systems
BEST PRICES - BUY/SELL
HIS Maintainable
Also Applications Software
CD SYSTEMS INC.
(402) 330-2310

L62, L64
L6000, L6600
PERIPHERALS
TERMINALS
URS
66 Montvale Ave.
Stoneham, MA 02180
(617)438-4300

HEWLETT PACKARD

AIRBORNE DATA SYSTEMS
WE BUY AND SELL
HEWLETT PACKARD
1000 • 2000 • 3000 • 9800 SERIES
Systems • Peripherals
PO Box 3784
Sonora, CA 95370
(209) 533-2400
FAX Available

HEWLETT PACKARD

IN STOCK
HP 3000
Model 40
7976's, 7933's, 7925's, 2619's
Call Bruce or Jean For Details
PVF Inc.
(301) 948-2684

HP 3000
BUY & SELL
Complete Systems, Memory, Terminals, Disk Drives, Tape Drives, Miscellaneous Parts.
Charles Finley
ConAm Corporation
(213)458-2643
(Formerly Finley & Associates)

HP3000 Model 64
For Sale or Lease
Immediate Delivery
CPU w/2 Meg, (24) 422 ports, (12) 232 ports, (2) INP ports; 6250 BPI tape; 600 LPM ptr.; (1) 404 Meg disk, (1) 120 Meg disk; CRTs: (10) 2622A, (2) 2382A, (4) 2622A w/ptr.; floppy drive; (3) 2601 ptrs.
CALL RALPH RINESMITH
513 641-4400

SPERRY UNIVAC

V-77 800 SYSTEM
(2) 256K CPU w/2 Pages WCS
(2) 8433/20 200 MB Disk Drives
(4) 10 MB Disk Drives
(2) 800 bpi Tape Drives
(2) 800/1600 bpi Tape Drives
(1) 300 LPM Printer
(1) 600 LPM Printer
THE EXCHANGE (206)644-7000
Ask for TOM BASS

SPERRY UNIVAC

SALE, TRADE OR?

System 80, Model 3. 3 1/2 years of a 5 year lease remaining. System is too large and expensive for our needs. Univac will not alter the contract in any way, therefore all offers will be considered for the system or any part.

786 K CPU
1 8417 Disk — 2 printers
2 8419 Disks — 4 CRT's

Call for additional information

Ron Bates: 1-(704) 922-7883

MISC.

FOR SALE
USED CONSUMER FINANCE BUFFERED TERMINALS
DMC 1980 Model 9 Printers
DMC 220A TCUs
292 Pair at $75.00 each
Call Jim Wilcox
(800) 345-6105 Ext 310
PA Only (800) 382-5226

DATAPOINT

Buy* Sell*Trade
American Computer Exchange
(216)247-2100

SOFTWARE FOR SALE

PDP-11 & VAX USERS

Make your mini perform like a mainframe

High performance. You need it when you go on-line. And you get it with CYX. You don't need a mainframe to build high performance on-line application systems vital to your day-to-day operations. Not even when you have a large number of concurrent users or a huge data base. With CYX, your mini will deliver the kinds of throughput rates and response times you once could only get with a mainframe.

The CYX Transaction Processing System gives you high performance and reliability because it:

- Manages block mode communications using 3270 (or compatible) terminals and fully buffered DV11 (or compatible) multiplexors.
- Keeps frequently accessed records in a dynamically controlled record cache.
- Synchronizes concurrent accesses at the record level.
- Optimizes disk throughput by distributing files across multiple drives.
- Reorganizes the data base dynamically.
- Allows spawning of frequently used processes.
- Provides transaction rollback, duplicate data recording, data journaling, and automatic restart/recovery for high reliability and system integrity.

Find out how to get top on-line performance with CYX and your PDP-11 or VAX by talking to Cytrol today.

"High performance software for vital business needs"

cytrol

4570 West 77th St., Edina, MN 55435 Phone **612/835-4884**
In the Northeast, contact: Russell Gloor **914/782-7822**

More And More IBM System/38 Users Are Choosing GBACS®

HERE ARE 3 VITAL REASONS WHY!

1. **HELP KEY** — GBACS* fully utilizes the HELP command for efficient on-line education of your staff.
2. **CODE MASTER SELECTION** — An RTC exclusive feature reducing programming time and costs. Total on-line assignment of code replacing the need for program defined tables.
3. **SUBFILES** — The advantage of System/38 subfile efficiency is fully utilized in all GBACS* modules.

GBACS* modules are independent and completely integrated. They run entirely in RPG III in a database environment. They include – a full line of FINANCIAL AND MANUFACTURING SYSTEMS, ORDER PROCESSING/INVOICING, and the recently added VEHICLE & EQUIPMENT MANAGEMENT, PERSONNEL MANAGEMENT and DISTRIBUTION SYSTEMS.

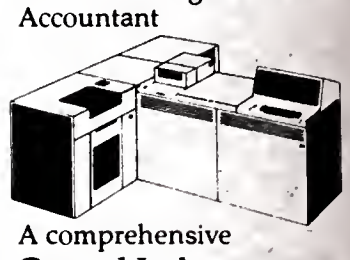
To get the most from your IBM System/38, call RTC Systems Inc. today. Take advantage of the experience gained by the RTC Systems' Research Center using its own IBM System/38 to get the most from your own IBM System/38.

RTC SYSTEMS INC.
49 Plain Street, North Attleboro, MA 02760
617-695-5008

SEE US AT BOOTH 1005
SOFTWARE/expo-East
March 15-17

HAVE YOUR OWN PRIVATE DEMONSTRATION OF GBACS*
Call Brian Sullivan today (617-695-5008) to set up an appointment and to discuss your specific needs.

Designed specifically for the
IBM System/38
and the Management Accountant



A comprehensive
General Ledger, Financial Reporting and Budgeting System

DHDial Company
Financial Accounting and Reporting Systems

Murray Financial Center
5550 LBJ Freeway, LB-1
Dallas, Texas 75240
(214) 458-0987

NEW SOFTWARE PACKAGE FOR LINKING MICROS TO SYSTEM 34

The Board of Education of the Township of Ridgewood, New Jersey, will be accepting sealed bids on May 20, 1983 for the purchase of all rights, title and interests in the copyright subsisting in the MICROLINK 34. MICROLINK 34 is a software package that can transform a well-known table top micro-computer system into a communication terminal for the System 34 when used in conjunction with a readily accessible hardware/software package. Information regarding bid forms and procedures is available from Board Secretary, Ridgewood Public Schools, 49 Cottage Place, Ridgewood, NJ 07451, Tel. (201) 444-9600. Demonstration of MICROLINK 34 are available by appointment only by calling Dr. Jonathan T. Hughes, Director of Computer Services, at (201) 444-9600.

Need general accounting software for IBM System/38?

We've simply solved your problem.

LAWSON ASSOCIATES has solved it with the first general accounting software specifically designed for IBM System/38. Not merely compatible, but state-of-the-art to fully utilize your computer's capabilities. Compare. You won't find a total software solution like it anywhere else.

DESIGN FEATURES: They include: on line systems using data base management; menu driven, user friendly programs written in RPGIII, the System/38 language; and integrated modules. Their benefits: ease of installation and use, plus maximum employee productivity.

INTEGRATED MODULES: Those available include: General Ledger and Report Writer/Accounts Payable/ Accounts Receivable/Fixed Assets/Payroll/Purchase Order Order Entry/Inventory Control

SERVICE FEATURES: Fully documented and supported. Onsite training and implementation. One year warranty. Available now for immediate installation.

For more information, please call or write:

NATIONAL SALES:
Lawson Associates
2021 East Hennepin Ave.
Minneapolis, MN 55413
(612) 379-2633

IN TEXAS:
Lawson Associates
5001 LBJ Freeway, Suite 175
Dallas, TX 75234
(214) 233-4474

LAWSON ASSOCIATES
WE SIMPLY SOLVE PROBLEMS

Changing Computers?

Retain your SOFTWARE INVESTMENT

Dataware's conversion approach provides the solution to management's conversion problems and facilitates the recovery of the initial capital investment in systems development.

- **COBOL to COBOL**
- **AUTOCODER/SPS to COBOL**
- **EASYCODER/TRAN to COBOL**
- **BAL/ALC to COBOL**
- **DOS/ALC to OS/ALC**
- **PL/1 to COBOL**
- **RPG/RPG II to COBOL**
- **RPG/RPG II to PL/1**

Faced with Conversion? Call or write today

The Conversion Software People
Dataware, Inc.
2565 Elmwood Avenue
Buffalo, New York 14217
Phone (716) 876-8722
TELEX: 91519

IBM SYSTEM 34/38

Para Research offers a different marketing approach for software. We provide the best software packages at lower prices. We do this to obtain volume sales, a larger user base and to encourage user feedback. This approach and the input of our many users have made us what we are today: the world's largest distributor of System/34 software. All packages are completely documented, supported by our hotline staff and our money-back guarantee.

WORD PROCESSING

Easy Text, a new word processing system for the IBM System/34, presents an easy-to-use system with on-line documentation. Easy Text is so "user friendly" that users with no experience can generate letters, memos, reports and mass mailings almost immediately. Now every workstation on the System/34 can function as a word processor greater in power than a stand-alone system. Easy Text is $750. Available on the System/38 in April.

Priced at $1,000, Paratext is the most successful and complete word processing system available for the System/34. There are more than 2,500 Paratext users. Paratext offers full-screen text editor, automatic justification, individual forms design, viewable corrections, heads-down typing, word wraparound, variable data insertion, label printing and math capabilities. Paratext is also available for the System/38 at $1,500.

MANAGEMENT SYSTEMS

Paracalc, a diversified modeling system, calculates budgets, cash flow, sales projections, commissions, return on investment, production forecasts, anything you can set up in rows and columns. Change one entry and all amounts are re-calculated accordingly in up to 24 columns and 400 rows. Consolidation from many models to one. Return on investment. Available on the System/34 or System/38 for $1,000. With over 2,500 users, this is the most successful package of its kind.

Paraplot turns statistical data into easy-to-read bars or points. It creates graphs and charts for almost any business activity. In fact, you can produce graphs over 25 inches high. The system plots on your System/34 character printer and CRTs. No special plotting equipment is required. $350.

Project Planner is an automated project control system that gathers and reports project progress on eight hierarchical levels with minimum user involvement. The system produces 47 different reports that help management plan, monitor and control work in progress. Available on the System 34/38 for $3,000.

ACCOUNTING SYSTEMS

Para Research offers a series of low-cost interactive accounting systems designed to interface with each other so users will have a completely automated financial/accounting system.

Accounts Payable provides complete control over payables and improves cash management. Accounts Receivable provides up-to-date status of customer records. General Ledger is a highly flexible package for maintaining complete business records. Payroll reduces clerical costs and gives users complete control over payroll processing.

Fixed Assets is an easy-to-use depreciation scheduling program that monitors capital investments. Billing provides order entry and invoicing capability. The Inventory system offers 999 cost levels to value inventory or price goods on a LIFO and FIFO basis. These systems are available for $1,000 each. General Ledger and Payroll and Fixed Assets are available on the System/38 for $2,000 each.

DATA SYSTEMS

Documentor, $600, provides complete automated documentation, with up to fifteen individual reports that describe systems and subsystems in each program. Clock, $250, an advance job scheduler, allows your System/34 to be productive 24 hours a day. Clock on the System/38 is available for $500. Rescue, $250, is a procedure re-start program that can also be used to create duplicate programs and procedures.

Easy List, $600, a report program generator, compiles an RPGII report or CRT program from a series of simple English prompts. You no longer need a programmer to create your own meaningful management reports. Time Tracker, $300, allows you to easily and accurately allocate computer costs by department, user, workstation or printer.

MAPICS MODULES

MAPICS Purchasing provides complete tracking status for manufacturers using IBM's MAPICS System. It allows input of multiple vendors per item and interacts with MAPICS Accounts Payable, Inventory Management and Materials Requirements Planning modules. Users can produce reports ranging from Purchase Price Variance to Suggested Order Placement to Cash Requirements. MAPICS Purchasing eliminates key entry and typing of purchase orders. Available on the System/34 for $1,500.

Four MAPICS enhancements allow for a detailed history of every accounting transaction. Accounts Payable and History provides information to evaluate payables by vendor, due date, order and amount. Payroll and Employee History produces a ledger card with detailed information on each employee. Accounts Receivable History and Inquiry provides a complete credit and collection system. Shipped Order Inquiry offers on-line inquiry to order entry and invoicing data. Each module is $400. Available on the System/38 in May.

PARA RESEARCH

Software Sales, Dept. CW11, Para Research Inc., Rockport, MA 01966 (617) 546-3446.

It all adds up to a System 36

*IBM 34 COMPUTER
MARK + 2 SOFTWARE
36

Creasy Systems' new Mark 2 general accounting software, which is comprised of 7 modules, is the right addition to the System 34. Call us. We'd like to help you. *IBM, Trademark of International Business Machines.

Creasy Systems
. . . NASHVILLE

1701 West End Ave., Suite 204,
Nashville, TN 37203

1-800-821-4398

• HDS • HDS • HDS • HDS • HDS • HDS •

Quality Software . . .

For your **IBM System/34-38**
From HARRIS DATA SERVICE, INC.
FINANCIAL • DISTRIBUTION • MANUFACTURING
• SPECIALTY BUSINESS MARKETS •

Quality Software Providing:

- Ease of Use
- Comprehensive Data Base Program Design
- Complete Documentation
- Complete, Internally Documented RPGII, RPGIII Program Source Code
- Automatic Release Updates
- Hotline Support Service
- Local Support Available Through Our Distribution Network
- **The Unheard of "Lifetime Limited Warranty" Policy on All HDS Products**

Contact Us Today For More Information
On Our *Quality Software* and
Facility Management/Programming Support Services
HARRIS DATA SERVICE, INC.
at
11629 W. Dearbourn Avenue • Milwaukee WI 53226
(414) 475-1760

• HDS • HDS • HDS • HDS • HDS • HDS •



Elegant Software
for IBM S/34 & S/38

General Accounting	Payroll/Personnel
Financial Reporting	Property & Equipment
Accounts Receivable	Report Writer
Accounts Payable	Oil & Gas
Order Processing	**All Systems are:**
Inventory Management	RPG II/RPG III
Sales Analysis	Data Base
Job Cost	Interactive

J. D. Edwards & Company

4949 S. Syracuse Street/Suite 5500
Denver, CO 80237
303/ 773 3732

Dallas — 214/ 458 0636
Northern California — 415/ 697 7754
Southern California — 714/ 751 5302

SOFTWARE
HONEYWELL
LEVEL 6 & DPS 6



PROVEN RELIABLE SOFTWARE FROM THE COMPUTER PEOPLE.

CD systems inc.
THE COMPUTER PEOPLE

14614 Grover St., Suite 200
Omaha, Nebraska 68144 (402) 330-2510

IBM S/38

JOB ACCOUNTING/38™ —
Cost Allocation & Usage Monitor
TRACKS, COLLECTS & REPORTS S/38 USAGE

JOB ACCOUNTING/38 is a trademark of New Generation Software, Inc.

NGS

NEW GENERATION SOFTWARE, INC.

341 Lincoln Street, Roseville, CA 95678 Phone **916 969-8448**
Outside California Call Toll Free **800 824-1220**

IBM SYSTEM/34
INTERACTIVE
SORT GENERATOR

- ELIMINATE CODING FORMS
- NO NEED TO KEY SORT SPECS.
- NO #GSORT KNOWLEDGE NECESSARY
- OPTION TO CREATE PERMANENT PROCEDURES
- EXECUTES SORT IMMEDIATELY

SPECIAL INTRODUCTORY
ONE-TIME LICENSE FEE $195.00
PRIORITY SYSTEMS INC.
1510 SKOKIE BLVD.
NORTHBROOK, IL 60062
(312) 564-8470

DIAL-A-DEMO

SEE OUR WIDELY USED DBMS
KEY/ 500
AND RELATED ACCOUNTING PACKAGES

■ Order Processing	
■ Accounts Receivable	For DEC
■ Inventory Accounting	RSTS/E
■ Accounts Payable	And The IBM
■ General Ledger	CS9000
■ Payroll	

SAUER computer systems
314-962-0382 • 800-325-9494

SOLID SAUER SOFTWARE
STEADILY UPGRADED SINCE 1974

software for sale | software for sale | software for sale

PDP-11 & VAX Software

EasyEntry
Quick form design
and data entry system
AIS-PL/I
ANSI Subset G
PL/I Compiler
BURCOM-11
PDP-11/Burroughs
Communications System
1-800-334-5510

applied information systems
500 Eastowne, #207
Chapel Hill, NC 27514
(919) 942-7801

Save time and money on application development for your
IBM SERIES/1
Call or write for information on PXS, the most widely used productivity tool for Series/1 users — over 1000 installations
H & A Computer Systems
30 Hotaling Place #204
San Francisco, CA 94111
(415)434-3517
SERIES/1 SPECIALISTS

IBM SYSTEM/38 BUILDING BLOCK SOFTWARE SYSTEM
RMS/38 offers full range of integrated applications for distribution, manufacturing and financial users. On-line systems using data base management. Menu driven. User friendly. RPG III code. Documentation and support. Ready to go. Ready to grow.
Call: (312) 932-2200
pcr professional computer resources
2021 Midwest Road, Oak Brook, IL 60521

TIME & SERVICES

Computer Time Services
Convenient Manhattan location offering a full range of data services including:
4341 II IBM 370/158
VS VM/SP CMS ROSCOE
XEROX 9700 LASER PRINTER
We have the capability of handling major, long-term accounts at very competitive rates. For more information or to arrange a meeting, please call.
D. Vanier at 212-752-1544
DCSI

COMPUTER TIME FOR SALE BURROUGHS B1855
Megabyte Main Memory
Disk Packs 1600 BPI Tape
1100 LPM Train Printer
Card Reader Keypunches
In-House Terminal
Software Available:
COBOL, COMPILER, DMS 2 DATABASE Systems, CANDE Program Development.
Contact William W. Barncord
Hinton Mortgage & Invest. Co.
P. O. Box 748
Dallas, Tx 75221
(214) 691-6000

TIMESHARING AVAILABLE
VAX 11/780-VMS
PDP 11/70-RSTS/E
• FORTRAN, COBOL, BASIC
• DATATRIEVE
• ORACLE ®
• STATISTICAL PACKAGES
• DECNET
• TYMNET ACCESS
CONTACT:
INSLAW, Inc.
Washington, D.C.
(202) 828-8600
® trademark of Relational Software, Inc.

Timesharing PRIME
• FORTRAN • COBOL
• BASIC V • RPG II
(Virtual Basic)
BLOCK TIME ARRANGEMENTS AVAILABLE
CONTACT: Dolores Kwain
The Functionality Group Inc.
180 North Michigan Avenue
Chicago. Illinois 60601
1-800-621-9155
312-372-6070 in Illinois

DEPOT COMPUTER REPAIRS
DEC-DG
ALL BOARDS
1-2 WEEK TURNAROUND
MEMORIES
POWER SUPPLIES
DISKS PACKS AND TERMINALS
ANY MANUFACTURER
DIGITAL DATA SYSTEMS, INC.
1551 N.W. 65 Ave., Plantation, FL 33313
305-792-3290
1-800-327-8662
TELEX-232005 ATT DIG

TIMESHARING VAX 11/780-VMS
• FORTRAN Graphics
• BASIC Author Programs
• COBOL Custom Software
• DATATRIEVE Hydrology Softw.
• Telenet Access Petroleum Softw.
• Floating Point Accelerator Low Rates (Interactive Batch)
• Direct Dial Detailed Resource Acctg.
Volume Discounts
7-Day, 24 Hour Service
Contact: Richard Santoro
In-Situ Inc.
209 Grand Ave.
Laramie, WY 82070
(307) 742-8213

Curtiss Wright Computer Services
4341-2 370/158-3
VS1-CICS-ROSCOE-DOS
REMOTE JOB ENTRY
CICS DEVELOPMENT
CICS PRODUCTION
CUSTOMIZED SOFTWARE
CONTACT JOE BARRETT
(201) 777-3454
15 MINUTES FROM LINCOLN TUNNEL
ONE PASSAIC STREET
WOOD RIDGE N J 07075

3081 TIME AVAILABLE
• PL/1, COBOL, FORTRAN, BAL Compilers
• TSO/SPF, PANVALET
• Direct or TELENET Dial Access (ASCII)
3270 Screens Via Protocol Converter
• RCA/CYLIX Leased Line Access (SDLC)
Maximium $450/month Line Charge
CPU & Other Rates Negotiable
For More Information Call or Write:
J. FRED GALE
15 Southwest Park
Westwood, Ma 02090
(617)329-3350
Telex 95-1980

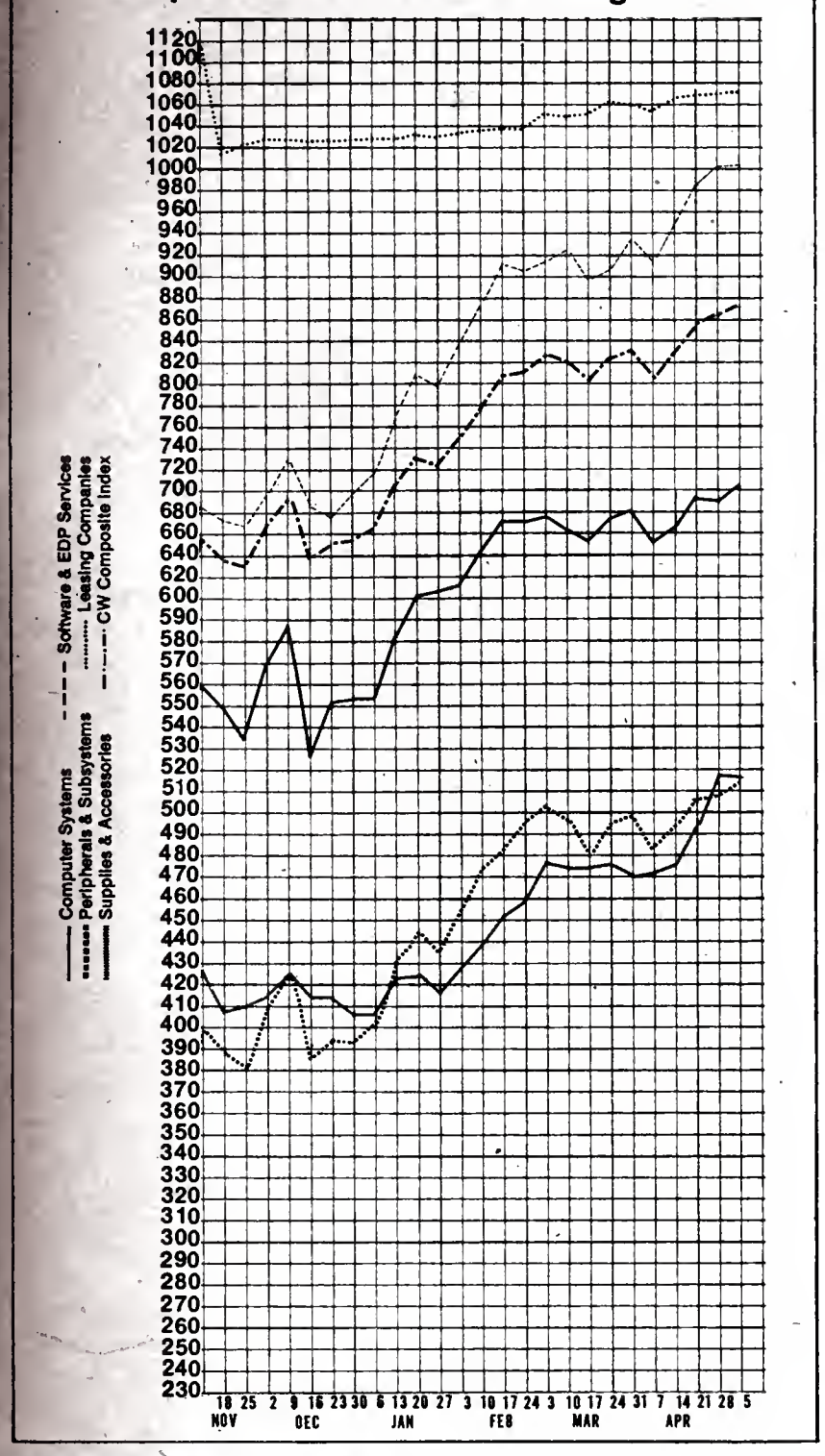
LOOKING FOR DEVELOPMENT TIME?
NO KILOCORE TICK CHARGES
NO CPU CHARGES
$7 PER HOUR CONNECT TIME
RSTS E TIME
BASIC PLUS 2
COBOL
BASIC PLUS, PASCAL, C } WITH CROSS COMPILER SUPPORT
WORD-II WORD PROCESSING
WAFE, TECO, EDT } PROGRAM EDITING
BUDGET BYTES™ 212-944-9230
by Omnicomputer™
1430 Broadway, New York, N.Y. 10018

ADVERTISERS INDEX

Access Telecom P/72
Advanced Electronic Design P/18
Advanced Management Research ID/18
Advanced Training Professionals 14
Apollo 78-79
Apple Computer P/76-P/77
Applied Data Research 3
Arkay Computer Inc. 23
Artificial Intelligence 9
Assoc.for Computing Machines P/42,P/84
Auragen P/36-P/37
The Back Store 24
BDS Computer Corp. 25
John Beall Company 75
Bell & Howell Co. ID/10
B.I. Moyle Associates P/68
Boole & Babbage P/20-P/21
Braegen Corporation 62
Brum-Ko Magnetics Corp. P/64
Burroughs P/4
Business People, Inc. P/41,P/55,P/57,P/59
CADO 39
C&D Batteries P/73
Centronics 72
CGA Computer Assoc. P/43
CIE Systems, Inc. 12
CIE Terminals P/60-P/61
Cipher Data ID/13
Codex Corporation ID/10-ID/11
Comdata Corporation 63
ComDesign 23
Comdisco ID/2
Commodore Computer 14
Compaq ID/7
Computer Management Research 45
Computer Peripheral Systems 39
Computer Tech Group ID/7
Computerworld Buyers Guide 81
Computerworld International Mktng. P/58
Computerworld Office Automation ID/14
Computerworld Rolls Royce 42-43
Computerworld Supplement 66
Control Data Corporation. P/34
Cord Cable Co. ID/2
Core & Code, Inc. 14
CRWTH Computer Coursewares 34
Cullinet ID/16-ID/17
CW Corporate P/38
CW On Communications P/40
Dallas Market Center ID/12
Data General P/62-P/63
Datapoint Corporation 18,ID/18
Data Processing Design P/65
Data Rentals-Sales 67
Datasouth Computer Corp. P/24
Datasphere P/56
Decision Point Marketing 26
Deltak P/66
Digital Equipment Corporation P/41
Digital Equipment Corp./ —Educational Services 64-65
Digital Equipment Corp./ —Micro P/44-P/45
Digital Equipment Corp./ —Professional PC 28-29
Dorlen Products ID/6
DP Facilities 24
Dysan Corporation P/85
Eastern Airlines 30
Eastman Kodak Co. 71
Elsevier Science Publishing P/81
EMCE P/46-P/49
Emulex Corporation 52
Enterprise Technology ID/12
Espirit P/11,P/13,P/15,P/17
Essential Resources, Inc. P/12
Execucom 57
Falco Data Products 118
Floating Point Systems, Inc. 68-69
Fusion Products ID/4
G.E. Intersil 38
General Electric 84
General Research Corporation 52
Georgetown University P/70
G.M.S. P/71
Goal Systems 11,13,15,17
Graham Magnetics P/19
GR Electronics 16
Hambrecht & Quist 80
Hitachi 19
Honeywell Info. Systems P/78-P/79
Human Designed Systems ID/15
IDA Ireland 47
Infodata Systems 48
Infotron P/30
Innovation Data Processing 5
Integrated Technology Int. P/10
Intel 60-61,P/69
IPL Systems P/16
KEL P/26
Kimtron Corporation P/22
K.W. Controls P/14
Lear Siegler 11,13,15,17
Lee Data Corporation ID/22
3M Company P/5
MCBA ID/19
Memorex 55
M&F Case Co. P/47
Micro Conference P/56
MicroFrame 34
Micro-Mainframe, Inc. 24
Microterm P/54
Mitron Systems Corporation 23
Molecular Computer 74
MV Associates 80
National CSS 31
National Semiconductor 51
NCR Corporation 35-37,P/75
Newcorp Products 58
Nixdorf 32-33
North Star Computer P/86
OCLI ID/4
Omni Offices, Inc. P/46
Panasonic 76,P/27
Phaser ID/21
Phaze Info. Machnines Corp. P/50
Philips Info Systems P/71
Plexus Computer P/46-P/47
Popcom P/72
Prentice 82
Prentice Hall Inc./College Div. 50
Professional Computer Resources ID/20
Quality Micro Systems P/25
SAS Institute 54,P/6-P/7
Saturn Systems 73
SDI P/52
Signal Technology Inc. 58
Sofsearch P/35
Software AG P/39
Software Results P/81
SPSS Inc. 59
Standard Software P/31-P/33
Star Technologies and Research 49
Stratus Computer ID/3
Symbolics, Inc. P/67
Synapse Computer 46
Syncsort 7
Sysed 50
Tandem Computers ID/8-ID/9
T&B Computing P/56
Technalysis P/58
Teleray P/74
Teletype Corporation 20-21
Televideo Systems/Terminals Div. 44-45
Telex P/23
Teltone P/51,P/53
Term-Tronics, Inc. P/70
Tone Software 50
TSI International P/29
Ungermann-Bass P/82
Uniq Computer Corporation 56
Unitech Systems, Inc. 50
University Computing 53
U.S. Data Systems 83
Value Computing, Inc. P/70
Visual Technology 70
Wang Laboratories ID/5
Weico Wire & Cable P/64
Western Union F.S. 27
Whitesmith LTD 22
Wolfe Computer Testing ID/11
Wright Line 77
Zenith Data System 10
Zilog Inc. P/28
Zytron P/52

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

Computerworld Stock Trading Index



Computerworld Sales Offices

Vice-President/Sales/Donald E. Fagan
COMPUTERWORLD, 375 Cochituate Road, Box 880, Framingham, MA 01701
(617) 879-0700

BOSTON SALES OFFICE (617) 879-0700
Northern Regional Manager/Chris Lee
Sr. District Manager/Ed Marecki, Jr.
District Managers/Joe Fitzhugh, Jim McClure
Sales Assistant/Kathy Doyle
COMPUTERWORLD, 375 Cochituate Road, Box 880, Framingham, MA 01701

CHICAGO SALES OFFICE (312) 827-4433
District Managers/Arthur Kossack, H. Newton Barrett, III
Sales Assistant/Jean F. Broderick
COMPUTERWORLD, 2600 South River Road, Suite 304, Des Plaines, IL 60018

NEW YORK SALES OFFICE (201) 967-1350
Eastern Regional Manager/Mike Masters
Sr. District Manager/Doug Cheney
District Managers/Ray Corbin, Joan Daly
Account Executive/Fred Lo Sapio
Sales Assistant/Gale M. Paterno
COMPUTERWORLD, Paramus Plaza I, 140 Route 17, North, Paramus, NJ 07652

LOS ANGELES SALES OFFICE (714) 556-6480
Regional Manager/Jim Richardson
District Manager/Bob Hubbard
COMPUTERWORLD, 18008 Sky Park Circle, Suite 260, Irvine, CA 92714

SAN FRANCISCO SALES OFFICE (415) 421-7330
Western Regional Manager/William J. Healey
Account Managers/Barry Milione, A.G. Germano, Theodora Franson
Account Manager, Classified/Eileen Dunn
COMPUTERWORLD, 300 Broadway, Suite 20, San Francisco, CA 94133

ATLANTA SALES OFFICE (404) 394-0758
District Manager/Jeffrey Melnick
Eastern Regional Manager/Michael Masters
COMPUTERWORLD, 1853 Peeler Road, Suite D, Atlanta, GA 30338

CLASSIFIED ADVERTISING (617) 879-0700
Al DeMille, Bill Cadigan
COMPUTERWORLD, 375 Cochituate Road, Box 880, Framingham, MA 01701

For foreign sales offices, see masthead on Page 2.

CW COMMUNICATIONS/INC.
Board Chairman/Publisher
Patrick J. McGovern
President
W. Walter Boyd
Senior Vice-President
Lee Vidmer

Group VP-Communication Services, Jack Edmonston. **Group VP-Circulation,** Margaret Phelan. **VP-Marketing,** Roy Einreinhofer. **VP-Sales,** Donald E. Fagan. **VP-Finance,** William P. Murphy. **VP-Editorial,** John Whitmarsh. **VP-Special Publications,** Robert Ziegel.

Computerworld Headquarters: 375 Cochituate Road, P.O. Box 880, Framingham, MA 01701
Phone: (617) 879-0700, Telex: 95-1153.

SALES **Vice-President,** Donald E. Fagan. **Corporate Advertising Administrator,** Frank Collins. **Display Advertising Supervisor,** Anne Hadley. **Display Advertising,** Tracey Eastman, Pam Valentinas, Laura Kentley, Alice Longley. **Classified Advertising Manager,** William J. Mills.

COMMUNICATION SERVICES **Group Vice-President,** Jack Edmonston. **Director Research,** Kathryn Dinneen. **Sales Promotion Manager,** Noreen Kimball.

PRODUCTION **Production Director,** Peter Holm. **Production Manager,** Marlene Stibal. **Supervisor,** Trish Gaudette. **Systems Manager,** Tom Pfau. **Typesetting Manager,** Carol Polack. **Art Director,** Tom Monahan.

CIRCULATION **Group Vice-President,** Margaret Phelan. **Circulation Manager,** Barbara Jeannetti. **Service Representative,** Peggy Kelly. **Assistant,** Carmela Priante.

Computerworld can be purchased on 35 mm microform through University Microfilm Int., Periodical Entry Dept., 300 Zeeb Rd., Ann Arbor, Mich. 48106. Phone: (313) 761-4700. *Computerworld* is indexed: write to Circulation Dept. for subscription information.

TRADE QUOTES

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, MAY 4, 1983

All statistics compiled, computed and formatted by TRADE QUOTES, INC Cambridge, Mass 02139

E X C H		1982-83 RANGE (1)	CLOSE MAY 4 1983	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
A	AMDAHL CORP	17- 49	48 5/8	+4 3/4	+10.8
N	BURROUGHS CORP	28- 51	50 3/4	+4 1/4	+9.1
O	COMPUTER AUTOMATION	7- 17	11 3/8	+ 3/4	+7.0
A	COMPUTER CONSOLES	15- 44	38 3/4	+2 1/4	+6.1
N	CONTROL DATA CORP	21- 52	47 7/8	+ 1/4	+0.5
N	CRAY RESEARCH INC	20- 49	43 1/2	+4 1/4	+10.8
N	DATA GENERAL CORP	20- 73	83 7/8	-9 3/8	-12.7
N	DATAPOINT CORP	11- 36	19 5/8	+ 1/2	+2.6
N	DIGITAL EQUIPMENT	62-132	115	-1	-0.8
A	EECO INC	6- 14	13	- 1/2	-3.7
N	ELECTRONIC ASSOC.	5- 12	9 1/8	- 1/8	-1.3
N	FLOATING POINT SYST	16- 38	31	+ 1/2	+1.8
N	FOXBORO	22- 43	37 3/8	+1 1/8	+3.1
O	FULCRUM COMP GRP	1- 3	1/4	0	0.0
O	GENERAL AUTOMATION	3- 10	10 1/8	+1 3/8	+15.7
N	HARRIS CORP	20- 51	42 3/8	0	0.0
N	HEWLETT-PACKARD CO	36- 87	76	+ 3/4	+0.9
N	HONEYWELL INC	60-119	118 3/4	+14 1/2	+13.9
N	IBM	57-117	116 1/2	+ 1/2	+0.4
O	IPL SYSTEMS INC	5- 11	7 3/4	- 1/4	-3.1
O	MAGNUSON COMP SYSTS	2- 5	3	0	0.0
N	MANAGEMENT ASSIST	7- 18	14 3/4	+ 1/2	+3.5
O	MINI-COMPUTER SYST	1- 2	2 1/8	0	0.0
N	MODULAR COMPUTER SYS	6- 15	12 3/8	- 5/8	-4.8
N	MOHAWK DATA SCI	10- 19	15 3/4	- 1/8	-0.7
N	NCR	39-120	115 3/8	-1 5/8	-1.3
N	PERKIN-ELMER	17- 33	25	+1 1/8	+4.7
N	PRIME COMPUTER INC	16- 45	30 1/4	-1 1/2	-4.7
N	SPERRY CORP	21- 39	36 5/8	+ 1/4	+0.6
O	TANDEM COMPUTERS INC	14- 34	28 3/8	- 1/2	-1.7
N	TEXAS INSTRUMENTS	71-176	146 1/8	+ 1/4	+0.1
A	WANG LABS "B"	13- 39	38 1/8	+1 1/8	+3.0
A	WANG LABS "C"	11- 39	38 3/8	+1 1/8	+3.0
	LEASING COMPANIES				
O	BOOTHE FINANCIAL CP	22- 40	39 1/2	+2 1/2	+6.7
N	COMDISCO INC	7- 30	29 5/8	+ 1/8	+0.4
B	COMMERCE GROUP CORP	1- 1	1/4	0	0.0
O	COMPUTER INVSTRS GRP	1- 2	1/2	0	0.0
O	CONTINENTAL INFO SYS	5- 22	22 1/4	+2	+9.8
N	DPF INC	5- 14	12 1/4	- 1/8	-1.0
O	ITEL	1- 3	1 1/8	0	0.0
O	LEASPAC CORP	1- 2	1/8	0	0.0
N	U.S. LEASING	18- 47	46 3/4	0	0.0

E X C H		1982-83 RANGE (1)	CLOSE MAY 4 1983	WEEK NET CHNGE	WEEK PCT CHNGE
O	COMPUTER DEVICES INC	4- 21	14 3/4	+ 7/8	+6.3
O	COMPUTER TRANSCEIVER	4- 12	9 3/4	- 1/2	-4.8
N	COMPUTERVISION CORP	19- 45	38 5/8	+1 7/8	+5.1
N	CONRAC CORP	21- 38	37 7/8	+2 3/8	+6.6
A	DATA ACCESS SYSTEMS	1- 4	5/8	- 1/2	-44.4
A	DATAPRODUCTS CORP	16- 41	23 1/8	- 3/8	-1.5
A	DATARAM CORP	5- 12	9 3/4	+ 3/8	+4.0
O	DATUM INC	2- 12	11	- 7/8	-7.3
O	DAVID JAMISON CARLYL	2- 7	3 1/8	- 1/8	-3.8
O	DECISION DATA COMPUT	3- 14	12 7/8	- 3/8	-2.8
O	DELTA DATA SYSTEMS	1- 4	4	+ 3/4	+23.0
N	ELECTRONIC M & M	5- 10	8 3/4	- 1/2	-5.4
O	EVANS & SUTHERLAND	18- 50	42 1/4	+2	+4.8
O	GANDALF TECHNOLOGIES	10- 22	13 3/8	+ 1/8	+0.9
N	GEN'L DATA COMM IND	6- 20	20	+2 3/4	+15.8
O	GENERAL TERMINAL CP	0- 2	3/4	- 1/8	-14.2
O	GREAT SOUTHWEST IND	2- 6	1 3/4	+ 1/4	+16.6
N	HAZELTINE CORP	22- 76	76 1/4	+7 7/8	+11.5
O	ICOT CORP	3- 10	8	0	0.0
O	INFORMATION INTL INC	10- 22	18 1/4	+1 1/2	+8.9
O	INTEL CORP	21- 51	50 1/2	+2 3/4	+5.7
O	IPL SYSTEMS INC	5- 11	7 3/4	- 1/4	-3.1
A	LUNDY ELECTRONICS	7- 18	14 7/8	+ 5/8	+4.3
A	MSI DATA CORP	14- 36	18 1/2	+1 3/8	+7.5
O	NETWORK SYSTEMS CORP	8- 24	24 5/8	+1 1/4	+5.3
O	OMEX	3- 5	5	+1	+25.0
N	PARADYNE CORP	20- 30	25 3/8	+ 1/2	+2.0
A	PENRIL CORP	7- 13	10 3/8	+ 1/4	+2.4
O	RAMTEK CORP	12- 28	21 1/2	- 3/4	-3.3
N	RECOGNITION EQUIP	4- 15	13 7/8	- 3/8	-2.6
O	SCAN DATA	1- 3	1 3/8	0	0.0
N	STORAGE TECHNOLOGY	16- 33	23 3/8	+1 7/8	+8.7
O	SYKES DATATRONICS	6- 27	9 1/2	+ 1/2	+5.5
A	T BAR INC	7- 14	10 3/4	- 1/8	-1.1
A	TAB PRODUCTS CO	8- 26	25 3/4	+1	+4.0
A	TEC INC	6- 12	9 5/8	+1 1/4	+14.9
N	TEKTRONIX INC	34- 75	67 1/4	+1 3/4	+2.6
N	TELEX	5- 27	22 1/4	-1	-4.3
O	TESDATA SYSTEMS CP	3- 11	10 5/8	- 1/4	-2.2
N	TIMEPLEX INC	7- 24	22 1/2	- 1/4	-1.0
O	VISUAL TECHNOLOGY	9- 24	22	-1	-4.3
O	WILTEK INC	1- 4	2 1/2	- 3/8	-13.0
	SUPPLIES & ACCESSORIES				
N	AMERICAN BUS PRODS	11- 27	25 3/8	+ 3/8	+1.5
O	BALTIMORE BUS FORMS	1- 2	3/4	0	0.0
N	BARRY WRIGHT	13- 27	25	-1 1/4	-4.7
O	CYBERMATICS INC	1- 1	1 1/4	0	0.0
A	DUPLEX PRODUCTS INC	12- 28	25 1/4	0	0.0
N	ENNIS BUS. FORMS	16- 37	38 3/4	+2 5/8	+7.6
N	3M COMPANY	49- 86	81 1/8	-4 1/8	-4.8
N	MOORE CORP LTD	26- 51	50	- 7/8	-1.7
N	NASHUA CORP	9- 19	16 3/4	+ 1/8	+0.7
O	STANDARD REGISTER	32- 99	87	+2	+2.1
N	WALLACE BUS FORMS	22- 56	53 3/4	-1 7/8	-3.3

E X C H		1982-83 RANGE (1)	CLOSE MAY 4 1983	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 6	4 3/4	0	0.0
O	ADVANCED SYSTEMS INC	9- 25	24 1/2	+ 1/2	+2.0
O	AGS COMPUTERS INC	7- 22	20 3/4	+2	+10.6
O	AMERICAN SOFTWARE	22- 28	28 1/4	+3	+11.8
N	ANACOMP INC	9- 23	20 1/8	+2	+11.0
O	ANALYSTS INTL CORP	5- 11	9 3/4	- 1/2	-4.8
A	APPLIED DATA RES.	8- 31	30 3/8	+ 3/4	+2.5
O	ASK COMPUTER SYSTEMS	12- 36	31 1/2	+ 1/2	+1.6
B	ASTRODYNE COMP IND	1- 6	5 1/8	0	0.0
N	AUTOMATIC DATA PROC	21- 40	37 3/4	+2 5/8	+7.4
O	COA COMPUTER ASSOC	5- 14	12 1/4	-1	-7.5
O	COMPUTER ASSOC INT'L	12- 57	53 1/2	- 1/2	-0.9
O	COMPUTER HORIZONS	8- 20	19 1/2	0	0.0
O	COMPUTER NETWORK	4- 10	9 3/8	+ 3/8	+4.1
N	COMPUTER SCIENCES	11- 23	17 1/2	- 3/8	-2.0
O	COMPUTER TASK GROUP	8- 21	20 3/4	+1 1/2	+7.7
O	COMPUTER USAGE	2- 22	16 1/2	- 1/4	-1.4
O	COMPUTONE SYSTEMS	15- 38	22 3/4	- 1/4	-1.0
O	COMSERV CORP	10- 20	12 1/4	+1	+8.8
O	COMSHARE	6- 13	10 1/4	- 1/8	-1.2
N	CULLINET SOFTWARE	12- 40	39	0	0.0
O	CYCARE SYSTEMS INC	9- 22	21 1/4	+ 1/4	+1.1
O	DATA DIMENSIONS INC	1- 2	3/4	0	0.0
O	DATATAB	0- 2	3/4	0	0.0
O	DYATRON CORP	2- 4	3 1/8	- 1/8	-3.8
N	ELECTRONIC DATA SYST	19- 65	65 1/4	+6 3/4	+11.5
N	INFORMATICS INC	10- 31	28 5/8	- 1/8	-0.4
O	INSYTE CORP	1- 3	1 5/8	0	0.0
O	IPS COMPUTER MARKET.	1- 2	1 1/8	0	0.0
O	KEANE ASSOCIATES	4- 13	11 3/4	- 1/4	-2.0
A	LOGICON	12- 38	37 1/4	+ 1/4	+0.6
O	MNOT SCI AMER INC	8- 28	26	- 3/4	-2.8
O	MATHEMATICA INC	12- 23	22	- 1/2	-2.2
O	MATHEMATICAL APP GRP	12- 22	19 1/2	+ 1/8	+0.6
O	NATIONAL DATA CORP	5- 25	23 3/4	- 1/8	-0.5
O	PANSOPHIC SYSTEMS	8- 25	24 1/2	+ 3/8	+1.5
N	PLANNING RESEARCH	6- 17	16 7/8	- 1/8	-0.7
O	POLICY MGMT SYSTS CP	36- 59	51	-6 3/4	-11.6
O	PROGRAMMING & SYS	1- 4	3 1/4	- 1/4	-7.1
O	REYNOLDS & REYNOLD	17- 44	43 1/2	+ 3/4	+1.7
O	SEI CORP	11- 32	32	+1	+3.2
O	SHARED MEDICAL SYST	13- 37	36 7/8	0	0.0
O	SCIENTIFIC COMPUTERS	6- 13	11 1/4	- 1/2	-4.2
O	SOFTWARE AG	5- 17	8 3/4	+ 7/8	+11.1
N	TYMSHARE INC	12- 30	19 3/4	+1 3/4	+9.7
A	URS CORP	5- 14	13	+ 1/2	+4.0
N	WYLY CORP	7- 13	12 3/8	+ 1/2	+4.2
	PERIPHERALS & SUBSYSTEMS				
P	AM INTERNATIONAL	2- 6	5 1/4	- 1/4	-4.5
A	ANDERSON JACOBSON	9- 26	20 1/2	+1	+5.1
O	AUTO-TROL TECHNOLOGY	8- 21	13 3/4	- 1/2	-3.5
O	BANCTEC INC	7- 33	15 3/4	- 3/4	-4.5
A	BEEHIVE INT'L	4- 11	11 3/8	+1 1/8	+10.9
A	BOLT,BERANEK & NEW	13- 47	46 3/4	+1 3/4	+3.8
O	CAMBEX CORP	2- 4	1 7/8	- 1/8	-6.2
N	CENTRONICS DATA COMP	6- 20	19	+ 1/4	+1.3
A	CETEC CORP	4- 10	8 5/8	- 1/2	-5.4
O	COGNITRONICS	2- 14	11 1/8	-1 5/8	-12.7
O	COMPUTER COMMUN.	1- 2	1 3/4	0	0.0

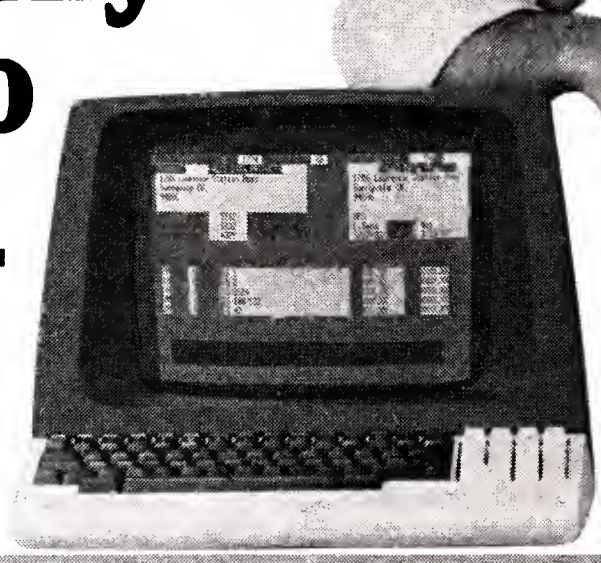
EXCH: N=NEW YORK; A=AMERICAN; P=PACIFIC; B=BOSTON; L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

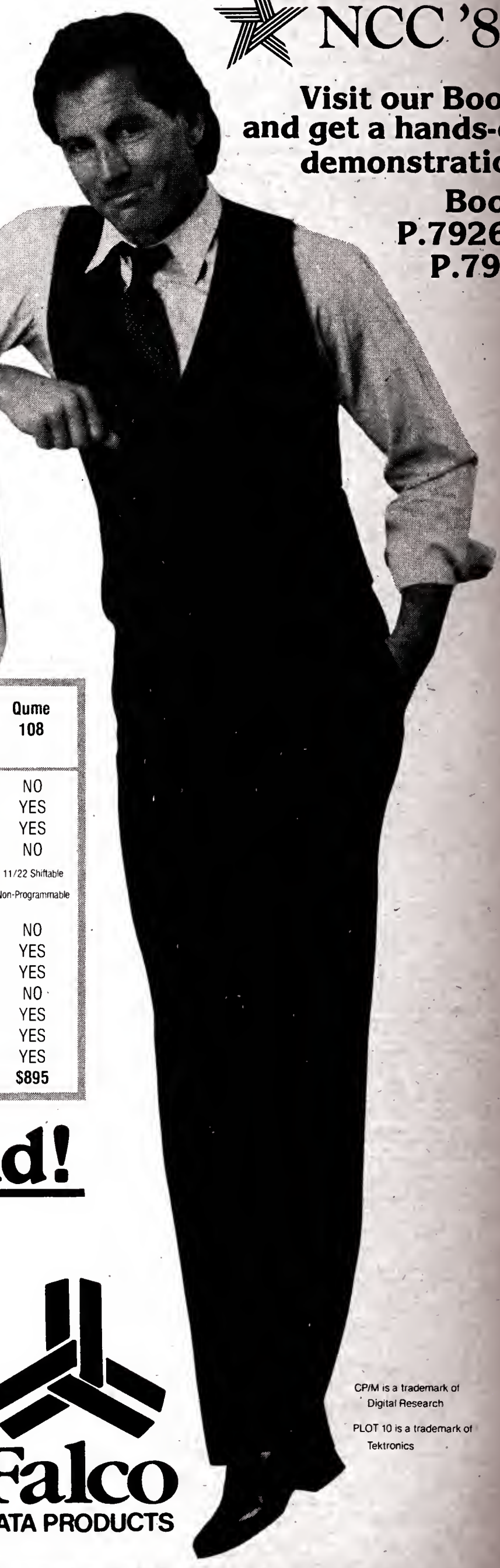
Wouldn't you rather buy a real Brilliant™ Terminal for only $695.00

NCC '83

Visit our Booth and get a hands-on demonstration.

Booth P.7926 & P.7928





CONDOR-2

COMPARISON CHART

FEATURE	Condor 2	Televideo 950	Televideo 925	Visual 300	Wyse 100	ADDS Viewpoint 90	Lear Siegler ADM 24	Qume 108
ANSI x 3.64 Compatible	YES	NO	NO	YES	NO	NO	NO	NO
Detached Keyboard	YES	YES	YES	YES	YES	YES	YES	YES
Soft Setup Screen	YES	NO	NO	YES	NO	YES	YES	YES
Non-Volatile Functions Keys	YES	NO	NO	YES	NO	YES	YES	NO
Number of Keys	10/20 Shiftable	11/22 Shiftable	11/22 Shiftable	12	8/16 Shiftable	15/30 Shiftable	8/16 Shiftable	11/22 Shiftable
Maximum Characters in Function Keys	1000	256	Non-Programmable	384	64	256	304	Non-Programmable
Video Attributes Hidden	YES	NO	NO	YES	NO	YES	YES	NO
Smooth Scroll	YES	YES	NO	YES	NO	YES	YES	YES
Block Mode	YES	YES	YES	YES	YES	YES	YES	YES
Independent Rec/TX Rates	YES	YES	NO	YES	YES	YES	YES	NO
Line Drawing Set	YES	YES	NO	YES	YES	YES	YES	YES
25th Status Line	YES	YES	YES	YES	YES	YES	YES	YES
Screen Saver	YES	NO	YES	YES	NO	NO	NO	YES
PRICE	**$695**	**$1195**	**$995**	**$1150**	**$995**	**$1095**	**$1195**	**$895**

of course you would!

That is why we at Falco Data Products are so excited! We feel that the **CONDOR-2** is the best high-volume business terminal on the market today with features second to none.

The **CONDOR-2** has all the advantages of Falco's popular family of Brilliant Terminals (over 20,000 in use) such as multi-board adaptability (Modem Board, PLOT 10™ compatible Graphics Board, and 64K CP/M™ compatible CPU Board.)

(408) 745-7123

Falco
DATA PRODUCTS

CP/M is a trademark of Digital Research

PLOT 10 is a trademark of Tektronics

1286 Lawrence Station Road
Sunnyvale, California 94086 (408) 745-7123